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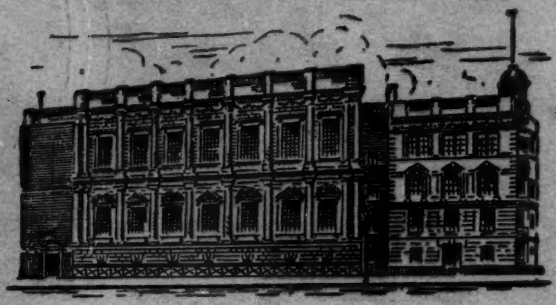

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CONTENTS.

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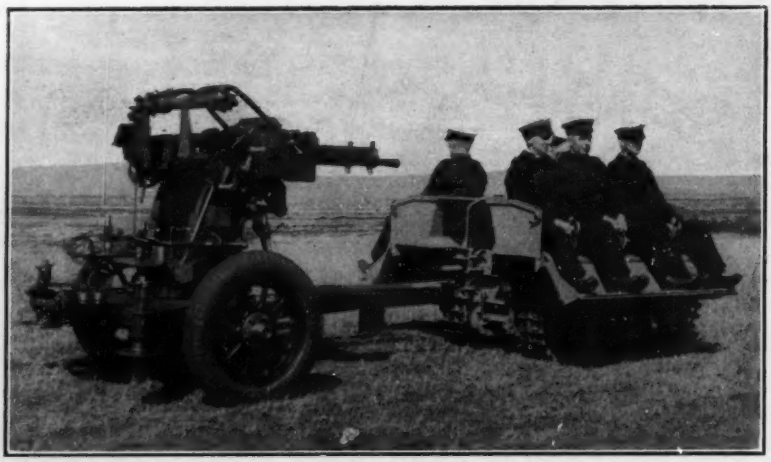

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CONTENTS FOR FEBRUARY, 1936.

	PAGE
Secretary's Notes	i
Frontispiece: His late Majesty King George V	—
In Memoriam	—
Letter of Condolence to His Majesty the King	—
The King's Messages to His Fighting Services	—
His Majesty King George V and His Fighting Services	5
Jellicoe. By Admiral Sir Lionel Halsey, G.C.M.G., G.C.V.O., K.C.I.E., C.B.	11
The Higher Commander. (*Lecture*). By Major-General A. P. Wavell, C.B., C.M.G., M.C.	15
The Reserves at Loos. By Brigadier-General Sir J. E. Edmonds, C.B., C.M.G.	33
Oil from Coal in War Time. (*Lecture*). By Colonel W. A. Bristow, M.I.E.E., F.R.Ae.S.	40
Australia's Defences. By Admiral Sir H. W. Richmond, K.C.B.	61
The Eardley Wilmot Prize Essay. By Lieut.-Commander P. W. Brock	66
Uniforms, Equipments, Standards and Colours of the British Army	86
Military History and Modern Warfare. By "Juniper"	89
The Doctrine of Strategical Bombing. By Major Oliver Stewart, M.C., A.F.C.	95
The Bren Light Machine Gun	102
Plate: The Bren Gun: Anti-Aircraft Mounting	—
The Bren Gun: Light and Heavy Mounting	—

Continued on page 10.

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CONTENTS—continued from page 9.

	PAGE
THE LOWER DECK, PAST AND PRESENT. (*Lecture*). PART I. BY REAR-ADMIRAL J. F. SOMERVILLE, C.B., D.S.O.	109
THE HARE, THE TORTOISE AND THE EAGLE. BY "SOLAIRE"	126
A JOURNEY TO SOME PENINSULAR BATTLEFIELDS. BY CAPTAIN C. R. A. SWYNNERTON, *p.s.c.*	135
THE EMPLOYMENT OF ANTI-AIRCRAFT SEARCHLIGHTS. BY LIEUT.-COLONEL M. F. GROVE-WHITE, D.S.O., O.B.E., R.E.	144
SALVAGE. BY "DEVONSHIRE"	155
SOVIET UNION FIELD REGULATIONS	158
THE INTERNATIONAL SITUATION :—	
THE LEAGUE OF NATIONS AND THE ITALO-ABYSSINIAN AFFAIR	165
THE HOARE-LAVAL PEACE PLAN	166
OIL SANCTIONS	172
THE ITALO-ABYSSINIAN WAR DIARY	173
THE SECOND LONDON NAVAL CONFERENCE	175
CORRESPONDENCE	180
NAVY NOTES	186
ARMY NOTES	197
AIR NOTES	213
REVIEWS OF BOOKS	224
ADDITIONS TO THE LIBRARY	235

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February, 1936

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Admiral the Earl of Cork and Orrery, G.C.V.O., K.C.B., has been elected to the Council in the place of Admiral Sir George P. W. Hope, K.C.B., K.C.M.G.

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2nd Lieutenant J. D. Hibbert, Royal Engineers.
Captain D. St. C. Thom, Royal Tank Corps.
F. S. Vyall, late Lieutenant, Q.V.O. Sappers and Miners, I.A.
Lieut.-Colonel C. B. Evans, R.I.A.S.C.
2nd Lieutenant I. A. Robertson, University Candidate.
Lieutenant I. L. Wight, The Suffolk Regiment.
Captain J. R. Birch, The Cheshire Regiment.
Lieutenant E. D. N. Harvey, The Royal Berkshire Regiment.
A. R. Macdonald, late 2nd Lieutenant, Royal Engineers.
Captain R. G. R. Oxley, The King's Royal Rifle Corps.
Lieutenant D. B. Gaye, The Dorset Regiment.
Bt. Major P. D. W. Dunn, D.S.O., M.C., The Border Regiment.
Lieutenant H. Butterworth, The North Staffordshire Regiment.
Lieutenant P. G. Chapman, The King's Royal Rifle Corps.
Lieutenant L. H. Landon, Royal Artillery.
Captain T. H. Dyke, The Queen's Royal Regiment.
Major E. W. T. Agar, M.C., The King's Own Scottish Borderers.
Lieutenant G. G. Green, The Black Watch.
Lieutenant C. Ravenhill, Royal Artillery.
Captain E. F. B. Cook, Royal Engineers.
Lieut.-Colonel R. W. Hackett, Royal Army Pay Corps.
2nd Lieutenant P. E. Johnston, Royal Artillery.
2nd Lieutenant A. H. C. Cock, The Hampshire Regiment (S.R.).
2nd Lieutenant C. L. Sayers, Duke of Cornwall's Light Infantry.
Lieutenant M. W. Barnett, 3rd Hussars.
2nd Lieutenant C. M. M. Man, The Middlesex Regiment (S.R.).
Captain T. N. Grazebrook, The Gloucestershire Regiment.
2nd Lieutenant J. E. F. Willoughby, The Middlesex Regiment.
2nd Lieutenant D. M. L. Gordon-Watson, Irish Guards.
Lieutenant J. D. Kitson, The Devonshire Regiment.
Major R. F. Symonds, O.B.E., T.D., 4th Battn. The Oxfordshire and Buckinghamshire Light Infantry.
Lieutenant D. J. Brodie, The Queen's Own Cameron Highlanders.
2nd Lieutenant V. F. Royle, The King's Own Royal Regiment.
Lieutenant J. G. Nicholson, The Buffs.

Captain H. J. W. Brodhurst, Royal Engineers.
Bt. Lieut.-Colonel C. E. Ryan, M.C., Royal Artillery.
Bt. Major G. W. Symes, M.C., The York and Lancaster Regiment.
Captain T. H. Travers, Skinner's Horse (D.Y.O. Cavalry).
Lieut.-Colonel V. O. Robinson, M.C., T.D., 6th Battn. The Sherwood Foresters.
Lieutenant R. H. M. Hill, Royal Artillery.
Lieut.-Colonel G. N. Going, late The South Staffordshire Regiment.
Lieut.-Colonel L. H. K. Finch, D.S.O., O.B.E., The Lancashire Fusiliers.
Captain R. S. Surtees, The Royal Northumberland Fusiliers.
Captain B. J. F. Malcolmson, The Hertfordshire Regiment, T.A.
Lieutenant J. H. Hooper, Royal Artillery.
2nd Lieutenant J. T. H. Gunning.
Captain C. I. V. Jones, Royal Artillery.
Captain D. A. G. Bannerman, The Q.O. Cameron Highlanders.
Lieutenant S. M. Boyle, The Green Howards.
Lieutenant S. O. de B. Snape, Bedfordshire and Hertfordshire Regiment.
2nd Lieutenant H. D. G. Martindale, The Bedfordshire Yeomanry, T.A.
Captain C. H. Cooper, R.A.O.C.
Lieutenant W. F. K. Thompson, Royal Artillery.

ROYAL AIR FORCE

Wing Commander H. A. Whistler, D.S.O., D.F.C., R.A.F.
Flight-Lieutenant R. H. Carter, R.A.F.
Flight-Lieutenant N. H. Fresson, R.A.F.

Anniversary Meeting

The Anniversary Meeting will be held at 3 p.m., on Tuesday, 3rd March, 1936.

The Council will present their Annual Report and Accounts, and there will be an election to fill the vacancies on the Council.

The Gold Medal and Trench Gascoigne Prizes and the Eardley-Wilmot Gold Medal will be presented.

Copies of the Annual Report and Accounts can be obtained on application to the Secretary.

Suspension of Entrance Fee

The Council will propose a Temporary Amendment to the Bye-Laws, framed to empower them to suspend the Entrance Fee. This is intended to enable as many officers as possible to avail themselves of the facilities afforded by the Institution during the period while H.M. Forces are being increased.

Sub-Lieutenants and Sub-Lieutenants (E) R.N.—Life Membership

The Admiralty have approved that the £10 prize awarded to Sub-Lieutenants and Sub-Lieutenants (E) who obtain all first-class certificates when passing for Lieutenants and Lieutenants (E) R.N., may be devoted to the payment of half their Life Membership of the Royal United Service Institution.

Gold Medal Essay (Military) 1936

The following subject has been selected :—

"Tactical and administrative movements in modern armies have been radically affected by the introduction of the internal combustion engine. Discuss the possibilities of its use in the British Army in assisting to overcome the strength of modern defence and in countering the increasing threat of air action."

Gold Medal Essay Competition (Air) 1935

The following essays have been received :—

"Speed, distance, height."
"The Walrus and the Carpenter were walking hand in hand."
"Forewarned is forearmed."
"The Music on the Wind."
"Dædalus."
"Virtute et Labore."
"Be prepared."

Result of the 1935 Competition

The following is the result of the 1935 competition for the Gold Medal of the Royal United Service Institution and the Trench Gascoigne Prize :—

Gold Medal and First Trench Gascoigne Prize :—Wing Commander the Hon. R. A. Cochrane, A.F.C., *p.s.a.*, R.A.F.

Second Trench Gascoigne Prize :—Wing Commander J. O. Andrews, D.S.O., M.C., *p.s.a.*, R.A.F.

Essays by the following writers have been honourably mentioned :—

Squadron Leader E. J. Kingston McCloughry, D.S.O., D.F.C., *p.s.a.*, R.A.F.
Squadron Leader G. S. N. Johnston, *p.s.a.*, R.A.F.
Squadron Leader W. M. Yool, *p.s.a.*, R.A.F.
Captain W. R. Patterson, R.N.

Eardley-Wilmot Medal Competition

The Council have made the first award of the Eardley-Wilmot Gold Medal to Lieutenant-Commander P. W. Brock, R.N., for his essay on "Changes in Naval Warfare owing to New and Modified Weapons."

Change of Address

Members are reminded that they are responsible for keeping the Secretary informed of any change of address. Non-receipt of the JOURNAL is almost invariably attributable to the fact that the member has not notified his movements.

LECTURE

The lecture on, "The Expansion of the Royal Air Force" by Air Marshall Sir C. L. N. Newall, K.C.B., C.M.G., C.B.E., A.M., which was posponed, will take place on 18th March.

LIBRARY

Facilities for Borrowing Books

The special attention of Members who are paying the comprehensive annual subscription of £1 5s. od., is invited to the fact that they are thereby entitled to the full privileges of the Lending Library without further charge. These include the right to have sent to them not more than four volumes at a time on loan, the Member paying postage both ways.

Old Members who have not wished to conform to the new arrangement and who are still paying the original subscription of £1 1s. od., must pay an additional subscription of 10/- per annum in order to belong to the Lending Library.

All Members are, of course, free to use the Library when they visit the Institution.

Rules Governing Return of Books

The attention of Members is invited to the following Regulations governing the retention and return of books :—

(1) Certain books, for which there is a special demand, must not be retained longer than a fortnight after the date of receipt. A notice to this effect will be found in the book.

(2) In the United Kingdom.—Books must normally be returned within one month of the date of issue ; but the Librarian is authorized to make extensions of one month at a time on application by a Member, up to a maximum of three months from the date of issue, if the work is not required by another Member.

(3) Stations Abroad.—When books are sent to Members abroad the same rules apply as for the United Kingdom, except that " the date of receipt " is substituted for " the date of issue."

N.B.—IN VIEW OF THE INCREASING DEMAND FOR BOOKS FROM THE LENDING LIBRARY, IT IS ESSENTIAL IN THEIR OWN INTERESTS THAT MEMBERS SHOULD ADHERE STRICTLY TO THE RULES GOVERNING THE RETURN OF BOOKS. FAILURE TO DO SO IS CAUSING MUCH INCONVENIENCE, AND INVOLVING THE INSTITUTION IN UNNECESSARY EXPENSE AND CLERICAL LABOUR.

MUSEUM

Crimean Exhibition

This Exhibition is being continued until 7th March next, when it will be closed prior to the annual cleaning.

Badges and Buttons

The Institution is indebted to Colonel Sealy Clarke and Lieutenant D. E. M. Fielding for gifts of badges and buttons.

Additions

(8801) Uniform of the Royal Lancashire Artillery Militia.—Presented by W. C. Clucas.

(8810) Statuette of a foot soldier, 1742.—Presented by Captain V. A. Denne.

(8811) Collection of bombs, Great War period.—Presented by Captain V. W. B. Vivian.

(8812–13) Uniforms which formerly belonged to Lieut.-General Sir F. W. J. Fitzwygram.—Presented by Miss Fitzwygram.

(8814) Set of coloured prints illustrating uniforms of the Crimean period.—Presented by Lieut.-Colonel M. B. Savage.

(8815) Brass despatch case, Sicilian Regiment, 1807–16.—Presented by O. F. Gollcher.

(8816) Uniform of the Tower Hamlets Militia, 1836.—Presented by Miss Bayley.

(8817) Binnacle cover from the German cruiser "Emden."—Presented by Major H. M. Kersey.

(8818) Souvenir of the last wedding held in the Banqueting Hall when it was a Chapel Royal.—Presented by Mrs. Sharman-Crawford.

Loans

(3618) Model of the Elizabethan galley "Elizabeth Jonas."—Lent by Captain C. M. Blackman, D.S.O., R.N.

(3619) Collection of Medals.—Lent by Lieutenant W. J. Wingrove, R.N.

(3620) German rifle, one of a consignment brought to Ireland by Sir Roger Casement in 1916.—Lent by Mrs. Arbuthnot.

(3621) Collection of medals.—Lent by Lieutenant W. J. Wingrove, R.N.

(3622–25) The following items, formerly the property of Admiral of the Fleet Earl Jellicoe:—Admiral's flag; Patent of Earldom; Coat of Arms; collection of Presentation Scrolls and Presentation addresses; Roll of the Order of the Bath; Gold Sword of Honour presented by the Corporation of the City of London; silver model of H.M.S. "Iron Duke"; silver-handled broom.—Lent by the Countess Jellicoe.

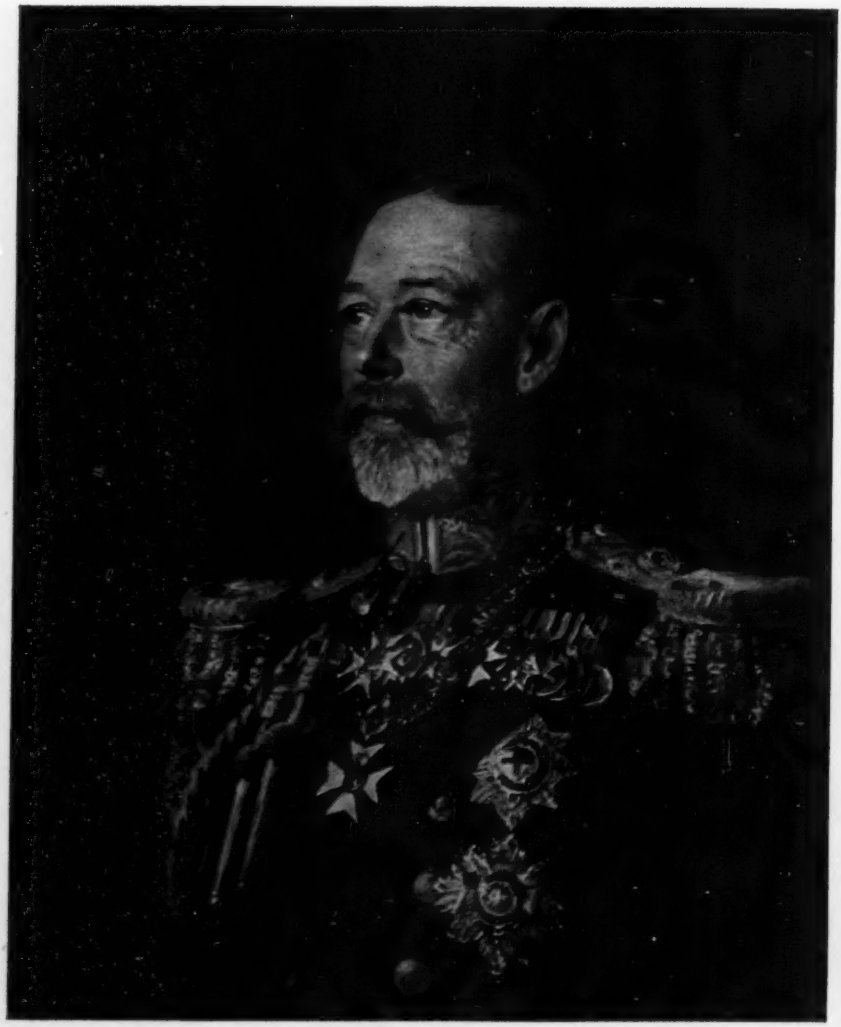
Attendance

The amount taken for admission during the past quarter was:—

£58 2s. 0d. in November.
£86 2s. 6d. in December.
£130 16s. 0d. in January.

Purchase Fund

This fund has been formed to assist in the purchase of new exhibits. The Council hope that it will receive the support of Members interested in the Museum.



HIS LATE MAJESTY KING GEORGE V.

from the portrait by Sir Arthur Cope, K.C.V.O., R.A.

IN THE ROYAL UNITED SERVICE INSTITUTION

IN MEMORIAM

HIS MAJESTY KING GEORGE V.

By the Grace of God, of Great Britain, Ireland, and the Dominions beyond the Seas King, Defender of the Faith, Emperor of India

Born 2nd June, 1865
Ascended the Throne 6th May, 1910

Patron of the Royal United Service Institution since 1910

Died at Sandringham 20th January, 1936

LETTER OF CONDOLENCE
FROM
THE CHAIRMAN, COUNCIL, AND MEMBERS
OF
THE ROYAL UNITED SERVICE INSTITUTION.
TO
HIS MAJESTY THE KING.

January 25th, 1936.

MAY IT PLEASE YOUR MAJESTY.

The Chairman, Council, and Members of the Royal United Service Institution, with humble duty, beg leave to offer their deepest sympathy to Your Majesty, to Her Majesty The Queen, and to all Members of the Royal Family, on the death of His Majesty, the late King.

We deplore the loss to the Empire of one who by His high example and steadfast devotion to duty has been an inspiration to all His people.

We recall with pride that His Majesty was Patron of this Institution since His Accession to the Throne, and with gratitude the fact that He and the Queen honoured us with a visit during our Centenary year in 1931. We treasure in our Museum a number of His gracious gifts.

We, Members of this Royal Institution, officers holding Your Majesty's Commission, beg to affirm our loyal devotion to Your Throne and Person.

With the profoundest veneration,

I have the Honour to be, Sir,

Your Majesty's most faithful and devoted servant,

W. E. GOODENOUGH,
Admiral.
Chairman of the Council.

TO THE KING'S MOST EXCELLENT MAJESTY.

THE KING'S MESSAGE
TO
THE ROYAL NAVY
AND OTHER NAVAL FORCES OF THE EMPIRE.

The King, on his Accession to the Throne, has addressed the following message to the Royal Navy and other Naval Forces of the Empire :—

On succeeding to the Throne, I desire that the Royal Navy and all my other Naval Forces throughout the Empire should know with what gratitude I recall the distinguished services rendered by them during the reign of the King, my beloved Father, and how much I cherish the recollection of the intimate personal association so long existing between my family and that profession to which my Father devoted his youth and early manhood, and in which I and two of my brothers received our early training.

My visits to many parts of the Empire have enabled me to note with pride that loyalty and devotion to duty remain the watchwords of the Royal Navy wherever it is called upon to serve, and that the same great traditions are guiding the development of the Naval Services of the Dominions, India, and of all other forces sharing in the Naval Defence of the British Commonwealth of Nations.

Conscious as I am of the great trust reposed in you and confident of your determination never to disappoint that trust, I shall always regard your efficiency and well-being as matters of the highest importance and shall take a deep interest in everything which concerns them.

EDWARD R.I.

THE KING'S MESSAGE
TO
THE ARMY
AND OTHER MILITARY FORCES OF THE CROWN.

The King, on his Accession to the Throne, has addressed the following message to the Army and other Military Forces of the Crown :—

I desire on my Accession to the Throne to express my thanks to the Army for its devoted services to my beloved Father. I recall with gratitude the noble response which the Army made during the Great War to his proud confidence in its loyalty, valour, and steadfastness. Its welfare was ever in his thoughts.

My own association with the Army is now of long standing. I look back to my service as a young Officer in the Great War as one of the most valuable experiences of my life. It gave me the opportunity and the privileges of comradeship with soldiers drawn from the United Kingdom, from the Dominions, from India, and from the Colonies. I learned to understand and to appreciate those essential characteristics which united them in the sternest crisis of our history: the same fervent attachment to the Crown, the same good humour and endurance in adversity, and the same determination to uphold the traditions of chivalry and courage which are our common inheritance.

In the happier days of peace I have been able to see by personal visits the Military Forces of the Crown both at home and abroad, and have everywhere noted with pride, the same gallant bearing which distinguished those forces in the field.

I shall be strengthened in the discharge of the great responsibilities which lie before me by the confidence with which I know I can rely on the unswerving allegiance of all ranks of the Military Forces of the Crown throughout the Empire.

EDWARD R.I.

THE KING'S MESSAGE
TO
THE ROYAL AIR FORCE
AND OTHER AIR FORCES OF THE EMPIRE

The King, on his Accession to the Throne, has addressed the following message to the Royal Air Force and other Air Forces of the Empire :—

On my Accession to the Throne I desire at once to address a message to the Air Forces at Home and Overseas. The Flying Services were first created during the reign of my beloved Father and it was with close personal interest that he watched their rapid growth from small beginnings ; their unification under the stress of war ; and their subsequent development into a powerful instrument of Defence, which shares with the older Services the honourable duty of safeguarding these shores and the Empire.

I have ever valued my close association with the Royal Air Force, marked of recent years by a special connexion with the Auxiliary Air Force as its Honorary Air Commodore-in-Chief. I have also witnessed with deep satisfaction the creation of the Air Forces of the Dominions and of India. If the Air Forces of the Empire are young, they have all the vigour of youth ; and, in the space of a few years, they have already achieved a high tradition. I shall watch their further progress with a keen personal solicitude for their welfare and with entire confidence that they will ever show that pride of service and unswerving loyalty to the Crown which they have displayed since their inception.

EDWARD R.I.

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[Authors alone are responsible for the contents of their respective Papers. All communications (except those for perusal by the Editor only) should be addressed to the Secretary, Royal United Service Institution.]

HIS MAJESTY KING GEORGE V AND HIS FIGHTING SERVICES

HIS LATE MAJESTY KING GEORGE V was head of each of the three fighting Services, and held the ranks of Admiral of the Fleet, Field-Marshal, and Chief of the Royal Air Force.

THE ROYAL NAVY.[1]

Prince George, with his elder brother, the Duke of Clarence, entered the training ship "Britannia" on 5th June, 1877. His first Captain was Henry Fairfax, and the Commander was Lord Ramsay, father of Vice-Admiral the Hon. Sir Alexander Ramsay, who married Princess Patricia of Connaught.

The Princes' first sea-going ship was the iron corvette "Bacchante," Captain Lord Charles Scott. They served in her from 1879 to 1882, during which time the ship made a world cruise, visiting the West Indies, South America, South Africa, West Indies, South America, South Africa, Australia, Japan, China, Singapore, Colombo, and a number of places in the Middle East.

In 1883 Prince George was appointed as a Midshipman to the steel corvette "Canada," employed on the North American Station. Before finishing his service there, he passed his seamanship examination and was commissioned an Acting Sub-Lieutenant on 3rd June, 1884, at the age of nineteen.

[1] An article on "The King's Naval Career" appeared in the JOURNAL of May, 1935.—EDITOR.

During the following year he took the usual courses and examinations at Greenwich and Portsmouth for the rank of Lieutenant. His first ship in that rank was the turret ship "Thunderer," commanded by Captain H. F. Stephenson (afterwards Admiral Sir Henry—Gentleman Usher of the Black Rod). After seven months he was transferred to the "Dreadnought." Subsequently he joined the "Alexandra"—the last of the central battery ships, and flagship of the Commander-in-Chief, his uncle, the Duke of Edinburgh. In these three ships he saw the Mediterranean Station when it was at the zenith of its importance.

In February, 1889, Prince George was appointed to the armoured ship "Northumberland," Captain S. C. Darwin, flagship of Vice-Admiral J. K. E. Baird, commanding the Channel Squadron. On the occasion of His Majesty's last visit to the R.U.S.I. Museum, in 1931, there was a special exhibition of "The King's Ships for a Hundred Years," and he at once picked out a model of his old ship, to which he alluded affectionately as the "Northo."

At the age of twenty-four the Prince was given his first independent command—Torpedo Boat "No. 79," which he joined for the Review and manœuvres of 1889. This was a small craft of only 75 tons, and the weather during the manœuvres was most stormy. Her young captain distinguished himself by taking in tow another torpedo boat which had broken down and was in danger of being driven on to a lee shore.

His next command was the gunboat "Thrush," in 1890. In this small ship he visited the Canary Islands *en route* to the North American Station, where she cruised until her return home in August, 1891. On paying off, he was promoted to Commander.

The death of his elder brother placed the Prince in the direct line of succession to the throne, and it was as the Duke of York that, on 29th June, 1892, he took up his next command, the cruiser "Melampus," with the acting rank of Captain. The "Melampus" took part in naval manœuvres of that year, forming part of the Red Fleet, First Division, under his first Captain, now Vice-Admiral Fairfax.

On 2nd January, 1893, he was promoted to Captain. Six months later he married Princess Mary of Teck. He did not serve afloat again until 1898. On 8th June of that year he hoisted his pennant in his last command, H.M.S. "Crescent," a first-class cruiser of 7,700 tons. The ship made a special cruise in home waters, visiting a number of seaport towns. For a short period she was attached to the Channel Squadron, during which time she was inspected by the Commander-in-Chief, Vice-Admiral Sir Henry F. Stephenson, the Duke's former

Captain in the " Thunderer " and " Dreadnought." The " Crescent " terminated a short but extremely happy commission by acting as guardship to Her Majesty Queen Victoria at Cowes.

On 1st January, 1901, the Duke of York was promoted to Rear-Admiral. In March of that year, having become Duke of Cornwall and York, he and the Duchess embarked in the " Ophir," specially commissioned under the white ensign, with Commodore A. L. Winsloe in command, for a Dominion tour. He opened the first Commonwealth Parliament in Australia, and visited New Zealand, South Africa, and Canada before returning home in November. In that month he was created Prince of Wales.

In 1905–6, the Prince and Princess of Wales visited India in the battleship " Renown," with Commodore the Hon. Hugh Tyrwhitt in command, and escorted by H.M.S. " Terrible," whose Captain was H. H. Campbell, the late executive officer in the " Crescent."

The Prince crossed the Atlantic in 1908 in the first battle cruiser, H.M.S. " Indomitable," Captain H. S. King-Hall, to attend the Quebec Centenary Celebrations.

After his accession to the Throne, His Majesty and Her Majesty the Queen embarked in the P. & O. steamer " Medina," commissioned as a royal yacht and flying the flag of Rear-Admiral Sir Colin Keppel, to attend the Delhi Durbar. The escorting ships were the cruisers " Defence," " Argyll," " Cochrane " and " Natal."

On 18th July, 1914, King George held what proved to be an epoch-making review of the Fleet at Spithead, for hardly had the ships dispersed when war broke out.

During the years of hostilities His Majesty visited the ships based on Rosyth in February, 1915, and the Grand Fleet at Scapa in July of that year, and again in June, 1916, after the battle of Jutland. In 1917, he spent four days with the Grand Fleet. He also paid several visits to the Dover Patrol.

The last visit of King George to his fleet was on the occasion of the Naval Review held at Spithead in July, 1935, to celebrate the completion of twenty-five years of his reign. In his message, sent by wireless to every ship in the Navy and all naval establishments in every part of the world, he alluded to :—

" These two happy days spent by me at sea, accompanied by my sons and with the Service to which I have had the honour to belong for so many years."

THE ARMY.

Prior to 1902, as the late King was serving in the Royal Navy, he held no military rank ; but on 26th June in that year he was made a General, and on 7th May, 1910, he was promoted to Field-Marshal.

On his accession to the Throne, His Majesty was graciously pleased to issue the following message to the Army :—

MARLBOROUGH HOUSE,
9th May, 1910.

My beloved Father was always closely associated with the Army by ties of strong personal attachment, and from the first day that he entered the Service he identified himself with everything conducive to its welfare. On my accession to the Throne, I take this the earliest opportunity of expressing to all ranks my gratitude for their gallant and devoted services to him.

Although I have always been interested in the Army, recent years have afforded me special opportunities of becoming more intimately acquainted with our forces both at home and in India, as well as in other parts of the Empire. I shall watch over your interests and efficiency with continuous and keen solicitude and shall rely upon that spirit of loyalty and devotion which has in all times animated and been the proud tradition of the British Army.

GEORGE R.I.

His Majesty held his first parade on 29th June, 1910, in the grounds of Buckingham Palace, where he inspected the whole regiment of Grenadier Guards, it being the first time in thirty years that the presence of the three battalions in London made such a parade possible. The Regiment was under the command of Colonel R. G. Gordon-Gilmour, C.B., M.V.O., D.S.O., and numbered 1620 of all ranks. After the inspection by His Majesty, the regiment marched past in slow time, and then in quick, after which the line was reformed and the regiment advanced in Review Order and gave a Royal Salute. The King then addressed the troops, and after the address the men, removing their bearskins and placing them on their fixed bayonets, gave three hearty cheers for their Colonel-in-Chief.

His Majesty showed a keen interest and solicitude in all matters connected with the life of the Army, and paid several visits to Aldershot. On the conclusion of his visit in May, 1913, he expressed himself as well satisfied with the development and *esprit de corps* of the Royal Flying Corps, then a branch of the Army, with the horsemanship of the Cavalry, and the great increase of recreation grounds for the men.

During the Great War, the King, being determined to see for himself his troops in the field and the conditions under which they lived and fought, paid several visits to the front, which were not unattended by risk. The first of these visits was in November, 1914, when he not only saw his own troops but discussed the situation with the French Commanders. He also took this opportunity to present the first two Victoria Crosses won by Indian soldiers.

On 19th July, 1919, when the Victory Celebrations took place in London, there was a march past of troops representing all the Allies, the salute being taken by the King at the base of the Queen Victoria Memorial.

His Majesty held his Silver Jubilee review of the Army on 13th July, 1935, at Rushmoor Arena, Aldershot. The troops of the Aldershot Command, to the number of about 9000 of all ranks, marched past under the command of General Sir Francis Gathorne-Hardy, K.C.B., C.M.G., D.S.O., A.D.C.

After the Review, the King sent a message to the troops, in which he congratulated all ranks of the Aldershot Command on the precision of their movements and the smartness of their appearance.

THE ROYAL AIR FORCE.

On 1st April, 1918, the Royal Naval Air Service and the Royal Flying Corps were amalgamated as one Service—the Royal Air Force. The King marked the occasion by sending the following telegram to Lord Rothermere at the Air Ministry, then in the Cecil Hotel in the Strand :—

" To-day the Royal Air Force, of which you are the Minister in charge, comes into existence as a third arm of the defences of the Empire. As General-in-Chief, I congratulate you on its birth, and I trust that it may enjoy a vigorous and successful life. I am confident that the union of the Royal Naval Air Service and the Royal Flying Corps will preserve and foster that *esprit de corps* which these two separate forces have created by their splendid deeds."

On 1st August, 1919, the titles of officers of the Royal Air Force were changed, and the King became Chief of the Royal Air Force.

The close attention with which His Majesty followed the achievements of the Service and developments in aviation is typified by his gracious message on the occasion of the winning outright of the Schneider Cup high-speed flight. On 1st October, 1931, an Air Ministry *com-*

muniqué was issued which stated :—" H.M. the King has personally directed Lord Amulree, the Secretary of State for Air, to convey to Squadron-Leader Orlebar, Flight-Lieutenant Stainforth and the officers and men of the High-Speed Flight his warm congratulations on the brilliant performance whereby a world's speed record was established on the evening of the 29th September. In so doing His Majesty intimated his great satisfaction with the high standard of efficiency prevailing among all ranks of the Royal Air Force and in the technical departments of the Air Ministry as evidenced both on the present occasion as well as in the recent flight for the Schneider Trophy.

" His Majesty has further directed that his congratulations shall be conveyed to the manufacturers and designers of the machine and engine, whose efforts have contributed so largely to their outstanding British successes."

His Majesty, in company with Her Majesty the Queen, attended a Jubilee Review of the Royal Air Force at Mildenhall and Duxford on 6th July, 1935. Subsequently he sent the following message to the Rt. Hon. Sir Philip Cunliffe-Lister, Secretary of State for Air :—

" I warmly congratulate all ranks of the Royal Air Force on the magnificent display which I have had the pleasure of seeing to-day. I was greatly impressed both by their smartness on the ground and their efficiency in the air, which leave no doubt that they will prove fully equal to any task which they may be called upon to fulfil. Please express to all ranks my appreciation of their labours in making the review such an unqualified success, together with my best wishes for the future welfare of the Royal Air Force."

JELLICOE

By Admiral Sir Lionel Halsey, G.C.M.G., G.C.V.O., K.C.I.E., C.B.

JOHN RUSHWORTH JELLICOE, whom I had the great honour and privilege of knowing for forty years, was modest, unassuming, level-headed and of kindly heart. He was a man whom to know was to respect and love—and the word "love" is by no means too strong to express the devotion of thousands of officers and men in His Majesty's Navy, and, indeed, thousands of others in all walks of life with whom he came in contact all over the world. He was a born sailor: one of his ancestors was Second Sea Lord of the Admiralty when Nelson was serving afloat; his father rose to be Commodore of a great Merchant Fleet; and the Admiral himself was born and spent his early years at Southampton—the port of the great ocean liners. So the sea was fairly in his blood, and little wonder therefore that he entered the Royal Navy and never regretted his choice.

From the outset of his career he inspired confidence by his earnestness, ability, and devotion to duty, whatever the character of the duty—pleasant or unpleasant. Those of us who followed his fortunes realized that, should he ever get the chance, he was destined to become the man of the hour.

He has left no trail of episodes and anecdotes, though I can quote one incident which demonstrates how, even as a boy, he was clear-headed and quick to act in any emergency. When he was a Midshipman in H.M.S. "Cruiser"—the training ship for youths in the Mediterranean, that ship was inspected by the Commander-in-Chief, Sir Geoffrey Hornby. He was put in charge of the vessel under sail. Sir Geoffrey made him hold on towards the fleet until a collision with the "Alexandra" seemed almost imminent; then he told the boy to put the ship about. A lad of his age might well have lost his head, but not so Jellicoe. As a result he earned far greater compliments than Sir Geoffrey, an officer of few words, was wont to give.

On three occasions Jellicoe nearly lost his life. The first was when the steamer "Ettrickdale" went on the rocks near Gibraltar. Jellicoe, with seven men, went in a small boat to try and save the crew. The

boat was capsized and it was with great difficulty that the crew reached the shore. The second time was when he was Commander of H.M.S. " Victoria." He was in bed suffering from fever, when that ship was rammed and sunk by the " Camperdown " in 1893. The third time was when he was Flag Captain to Sir Edward Seymour in China and commanded a column in the Boxer Campaign in 1899. The fate of the column while retiring hung in the balance, when Jellicoe was shot through the lung. After a time he sent for an officer and asked how things were progressing. The officer tried to make the best of matters, but Jellicoe flashed back, " Don't lie—tell me the truth."

Jellicoe was exceptional even at this stage in his career, for he was at once a student, a logical thinker, an organizer, and a man of action. Before he reached Flag rank he had made himself a supreme master of his profession, and his wide knowledge and experience were put to severe tests when, as Controller of the Navy and Second Sea Lord successively, he served at the Admiralty in the years immediately preceding the outbreak of the Great War.

Perhaps the most painful of all his naval duties was when he was ordered, in August, 1914, to convey personally to Admiral Sir George Callaghan the Admiralty's order that he (Jellicoe) had been sent to supersede him as Commander-in-Chief of what was subsequently known as the Grand Fleet. He tried hard to avoid so unwelcome a task, though it meant refusing the greatest command ever offered to a naval officer. This was not due to any lack of confidence in himself, but from loyalty to an old friend. He also feared, knowing the respect in which Sir George was held, that a change in the command in such early days of a war might adversely affect the loyalty, morale, and discipline of the Fleet.

It can be said without fear of contradiction that no man has ever been regarded with greater confidence than he was during the period when he was moulding the Grand Fleet to its great purpose—the main defence of the British peoples. Under him there was never a murmur of discontent under the most trying circumstances during the three years and four months in which he was Commander-in-Chief—a time of weary watch and ward until the battle of Jutland was fought and the Germans driven off the seas.

Jellicoe was a man who lived a full life. He had many outside interests. He was a good sportsman and lover of all games, and certainly above the average as a player in cricket, racquets, lawn tennis, and golf. Indeed he set a great example to all who came in contact with him of " how to play the game." His one thought was for his side, as in the supreme ordeal it was for the nation, and not for himself. He

enjoyed life in a characteristically quiet way. Of the happiest disposition, whether at work or at play, he always tried to keep himself fit both mentally and physically. In that long monotonous time at Scapa Flow during the Great War, there was never a day that he did not take some form of physical exercise either on board or on shore.

Lord Jellicoe, as the Navy knew him, was a singularly attractive mixture of confidence and modesty; he was always ready to hear the views of others and was ever grateful even though they were not his own views. With rising fame he never forgot a friend, however humble, and he helped many a lame dog over a stile. His sympathy was unfailing. He was always mindful of the troubles and anxieties of others, and no one could have been more helpful when help was possible. He was ever vigilant to right a wrong and scrupulously fair in all his dealings. He always gave full credit to others. In his first book, *The Grand Fleet*, tribute is paid to the services of upwards of three hundred officers, for he was of all men the most generous and just in his estimate of the work of others.

Fortunate indeed were those officers who were privileged to serve on his staff, for no staff officer could have wished for a better or wiser or more considerate chief. Whatever the department, the Commander-in-Chief knew all about it, but at the same time the chief of that department knew that he was trusted completely as long as trust was merited.

Earl Jellicoe was, of all men, the most self-reliant. He was supported in all his work, and in all his trials—and he had his trials—by his faith in his God, his King, and his country.

I have so far referred to his sea-going career as a great naval officer. But after his retirement from active naval duties, he showed the same qualities—amazing energy, zeal, and application—as he had exhibited at sea and at the Admiralty. In the work he did for his country and his countrymen during his seventeen busy years from 1918 until his death, he never spared himself. As Governor-General of the Dominion of New Zealand he earned the same love and affection from every New Zealander—Maori or Pakeha—as he had inspired in the officers and men of the Royal Navy. After his term of office there, he succeeded the late Field-Marshal Earl Haig as President of the British Legion, and it is impossible for me to write adequately of the wonderful way in which, without thought of his own health or interests, he, in an incredibly short time, got a grip of the needs of the ex-Service men and of the working of that great organization. Suffice it to say that he made it his business, as he always had done in life, to make himself acquainted with everything there was to know by the first-hand method of travelling from end to end of the country and seeing for himself. The result was

that he earned the undying gratitude of every ex-Service man, and the admiration and respect of all the officials at the headquarters in Haig House. Although, after a severe illness, he had to give up the Presidency of the British Legion, his interest in and hard work for it never ceased, and its welfare was in his thoughts to the end.

There is another body of men, so important to this maritime Empire of ours, whom Lord Jellicoe never forgot and of whom he often spoke in terms of the highest admiration. The officers and men of the Merchant Navy were his pride; without them, as he frequently said, the Great War could not have been waged and won, nor could the Empire have continued to exist. The Royal Navy is deeply indebted to the Merchant Navy for having given this one of its sons to His Majesty's Fleet, thus forging a lasting link of sympathy and understanding between the two national services.

Now the mortal remains of that great English gentleman "Jellicoe," as he will be referred to on the inscription—that and nothing more, rest in St. Paul's Cathedral, where Nelson, Collingwood, and other naval heroes of our race sleep their last sleep within sound of the sirens of the ships which pass up and down the River Thames.

THE HIGHER COMMANDER

By MAJOR-GENERAL A. P. WAVELL, C.B., C.M.G., M.C.

On Wednesday, 4th December, 1935.

GENERAL SIR J. T. BURNETT-STUART, K.C.B., K.B.E., C.M.G., D.S.O., in the Chair.

THE CHAIRMAN: General Wavell has lectured from this platform before and requires no introduction to you. Unlike most of those who from time to time review and analyse for us the attributes of the higher commander, he does not speak from a comfortable seat in the front row of the stalls but from the arena itself.

LECTURE.

THERE are, obviously, many ways in which one can approach the subject of high command and the higher commander: historically—tracing its manifestations and developments from the earliest times; contemporaneously—dealing with the commanders of the late War and the present state of generalship; or futuristically—forecasting conditions in wars to be, if wars are still to be. For the first I am deficient in the knowledge, for the second I lack the courage, for the third I have not the imagination. What I have set myself to do in this lecture is: firstly, to define the essential qualifications for a commander—past, present or future, with a few examples from the past—the British past as far as possible; secondly, to consider the modern conditions in which high command has to be exercised; and thirdly, which is the only useful part of the lecture (if indeed it proves to be useful at all), to suggest any measures which can be taken now to produce adequate commanders in war.

One difficulty that I found when I started to define the essentials of generalship was that there are two quite different types of commander, irrespective of the rank they hold; and what is applicable to one type is not always applicable to the other. There is the man fitted for independent command, confident in his knowledge and ability, and delighting in responsibility; from his type are drawn those impressive figures that historians have elected to call "the great captains." And there is the other type, the competent executive General, *le bon Général ordinaire* as the French call him—excellent at handling and administering troops under the orders of a superior, but apt to be at a loss when placed in sole command. An army needs both types; the difficulty

often is to recognize which is which and to prevent the wrong one being " pulled out of the hat." An excellent executive commander often fails when on his own, while the good independent commander is sometimes a difficult subordinate. I cannot hope to differentiate between the two types throughout my lecture, but I will ask you to bear the distinction in mind, and I will simply define the term " higher commander " as a divisional commander or better.

A second difficulty is that the functions and qualifications of a General in peace differ considerably from those required of him in war. Hence Generals with grêat peace reputations often fail in war, while those who have made their names in war are not always good trainers of troops in peace. To put it as briefly as possible, in peace the " head " is perhaps of more importance than the " heart " ; in war the " head " is of no value without the " heart." In this connection, something told me long ago by a mountain-gunner friend came back to my mind while I was considering the essential qualifications of a General. He said—whether truly or not I have never ascertained—that in the old days, whenever a new design of mountain gun was submitted to the Artillery Committee, that august body had it taken to the top of a tower some hundred feet high, and thence dropped on to the pavement below. If it was still capable of functioning, it was given further trial ; if not, it was rejected as flimsy. The committee reasoned that mules and mountain guns might easily fall down the khud side and must be capable of surviving so trivial a misadventure. On similar grounds, rifles and automatic weapons submitted to the Small Arms Committee are, I understand, buried in mud for forty-eight hours or so before being tested for their rapid firing and other qualities. I am not suggesting that we should apply the same physical tests to our Generals, but I am trying to draw a mental parallel. The mind of a General in war is apt to be buried, not merely for forty-eight hours but for days and weeks, in the mud and fog of unreliable information and uncertain factors ; and may at any time receive from an unsuspected move of the enemy, an unforeseen accident, a treacherous turn in the weather and so forth, a bump equivalent to a drop of at least a hundred feet on to something hard. Delicate mechanism is of little use in war, and this applies to the mind of the commander as well as to his body : to the spirit of an army as well as to the weapons and instruments with which it is equipped. All material of war, including the General, must have a certain solidity, a high margin over the normal breaking strain. It is sometimes argued whether war is an art or a science : I know of no branch of art or science in which rivals are at liberty to throw stones at the artist or scientist, and to steal his tools and destroy his materials while he is working—always against time—on his picture, statue or

experiment. Under such conditions, how many of the great masterpieces of art or discoveries of science would have been produced? No, the civil comparison to war must be that of a game, and a very rough and dirty game for which a robust physique and robust mind are required—those are the first essentials.

Before giving you my own views on the qualifications of a higher commander, I will quote one of the earliest definitions I have been able to find of the virtues, military and otherwise, that a General should possess, so that you may judge how far the modern conception has altered. A Greek military expert, writing nearly two thousand years ago, says this of higher commanders: "A General must be continent, sober, frugal, hardworking, middle-aged, eloquent, a father of a family, and member of an illustrious house. In addition, a General should be polite, affable, easy of approach, and cool-headed."

I propose to consider the essential qualities of a modern high commander under three heads—physical, moral, and mental. The physical attributes are courage, health and youth. Personal appearance we need not worry about: an imposing presence can be a most useful asset, but good Generals, as they say of good racehorses, "run in all shapes." Physical courage we are apt to take for granted: it is not so essential a factor in reaching high rank as in the old days of close-range fighting, but it still has a very considerable importance to-day in determining the degree of risk a commander will take to see for himself what is going on—and I do not see how any General can properly exercise command without constantly risking his person to make a very close acquaintance with the terrain he has to fight over and with the situation on his front by personal reconnaissance, both from the ground and in the air.

Health is, of course, most important; but it is a relative quality: we would, I imagine, sooner have on our side Napoleon sick than many of his opponents whole. A great spirit can rule in a frail body, as Wolfe and others have shown us. Marlborough during his great campaigns would probably have been ploughed by many a medical board.

Next comes the vexed and delicate question of age. The ancient poets have pointed to the scandal and absurdity of old men at war and old men in love; but at exactly what age a General ceases to be dangerous to the enemy and a Don Juan to the other sex is not so easy to determine. With lovers, the age of the body may be the chief deterrent to the seeking of fresh conquests; with Generals, it should be, though it seldom is, the age of the brain. One can point to Hannibal, Alexander, Napoleon, Wellington, Wolfe—to name only a few—as proof that the

highest prizes of war are for the young men ; on the other hand, Julius Cæsar, Cromwell and certain others *began* their serious soldiering well over the age of forty ; Marlborough was fifty-four when he won his first great victory at Blenheim ; Turenne's last campaign, at sixty-three, is said to have been his boldest and best ; Moltke, perhaps the most competent of the moderns, made his name at the age of sixty-six and confirmed his reputation at seventy ; Foch at sixty-seven still possessed energy, originality and vitality. In making comparisons with the past, we must remember that men develop later nowadays ; to go back a hundred and fifty years, Wellington, Wolfe, Moore, Craufurd were all commissioned at the age of fifteen, and some of them saw service soon after joining. Also, Northern races like the British mature later, and perhaps last longer, than Southern or Eastern races. Who can really give exact values to the fire and boldness of youth as against the judgment and experience of riper years ? It must depend on the individual, and it is a question of the brain rather than of the body. If the mature mind has still the capacity to conceive and absorb new ideas, to withstand unexpected shocks, and to put into execution bold and unorthodox designs, its superior knowledge and judgment will give it the advantage over youth. It is the General whose ideas have never travelled beyond the last war he was engaged in or has read of, and who will sanction no project that is not honoured by time and the Field Service Regulations, who is the real danger, whatever his age. Originality and daring are not always the prerogative of fiery youth : Lord Allenby was fifty-seven when he conceived and executed his final victory over the Turk—one of the most brilliant strategical designs of all military history ; and many young men would have succumbed to the physical exhaustion of the long drives in heat and dust over bumpy tracks that he undertook almost daily to visit his troops and from which he returned with unimpaired energy.

Let us leave here, for the time being at any rate, this problem of youth and age, merely taking note of my own opinion that a British General's career as such should begin, if possible, by promotion to Major-General between the ages of forty and forty-five in peace. The age at which he should retire I will leave to your individual opinions. In war reduce ages by five to ten years all round.

Now we come to moral qualities : these must precede the mental—for no amount of study and learning will make a man a leader unless he has the natural qualities of one, and the soldier, like other humans, is governed by the heart rather than by the head. I do not propose to enter into any long discussion of these ; they are known to you all and are well set forth in the beginning of the latest edition of Training

Regulations. I will mention only the barest essentials: a leader must have what we call "personality"—which is simply knowing what you want and being determined to get it; he must have a genuine interest in and knowledge of humanity—the raw material of his trade. Most vital of all, he must be gifted with what we call the fighting spirit or the will to win: we all recognize it in sport—the man who refuses to acknowledge defeat, who always comes back at you, who plays his best when the game seems lost or hangs in the balance; the modern highbrow probably defines it as having a "superiority complex." There are other qualities I might expand on—loyalty, straightness, simplicity—the supposed soldierly virtues; but you all know them and recognize them when you see them, or the lack of them, in your leaders. A commander can fool his superiors most or even all the time, but he cannot fool his subordinates even half the time.

If I had to take one quality as the mark of the really great commander, as distinguished from the ordinary General, I would call it the spirit of adventure. He must, in fact, have at least a touch of the gambler in him. As Napoleon himself said: "If the art of war consisted merely in not taking risks, glory would be at the mercy of very mediocre talent."

We have now decided approximately on the physical and moral composition of our commander. He should be as active as possible—in mind as well as in body: he must be quite determined to know for himself—alive or dead—the conditions of battle on his front; he must be human; his character must be such that his troops will be confident of receiving square meals and a square deal and his superiors of receiving loyal support; he must know what he wants, and what he wants most must be victory.

Now for his mental make-up. Many have in the past risen to the highest ranks, and have even won victories, with little addition to the foregoing qualities in the way of mental equipment except a camp-kit knowledge of strategy and tactics and a wardrobe knowledge of the Dress Regulations. But times have changed, and we want rather more now. I think we shall agree that all military learning must be based on a solid foundation of common sense. Writers and artists, who deal in ideas, may treat them with imaginative brilliance. Facts, with which the soldier is mainly concerned, demand imaginative common sense, that is to say, foresight based on what the French call *le sens du praticable*—knowledge of what is and what is not practical. Add to this a realization that war, especially modern war, is not a narrow professional activity but that it covers practically the whole field of human

life, and we have the type of mind required by the soldier. Now to what branches of study should he apply this mind—for without study even these excellent qualities will be largely wasted? The technicalities of his trade must come first, and a really sound knowledge of administration, organization, and transportation is the proper basis of technical military knowledge, rather than strategy and tactics. All the great commanders have had this understanding of the principles and practice of movement and administration—the "logistics" of war, some call it; it is the lack of this knowledge that puts what we call "amateur strategists" wrong, not the principles of strategy themselves, which can be apprehended in a very short time by any reasonable intelligence. A study of administration, beginning with that of his own unit, must, therefore, be the foundation of an ambitious officer's learning. Some are, however, inclined to consider this the end instead of the means and to immerse themselves in the trivialities of the trade at the expense of outside knowledge. A broad outlook is absolutely essential for anyone who aspires to high command.

A high commander—and the higher the more so, will have to deal increasingly with statesmen, politicians, and other civilians of his own nationality, and with soldiers of other nationalities. Unless he has a real gift that way he had better not try to talk their language, but the more general knowledge he has of their characteristics and point of view, the better.

We have now got thus far with our higher commander: he is active in brain and body, bold and determined; he has a solid foundation of common sense, and a thorough knowledge of the technical possibilities of the instrument he wields; but he is broadminded in his general outlook. Before passing on to consider the likelihood or otherwise of finding or implanting such qualities in the modern professional soldier and the conditions in which these qualities have to be exercised if and when we have found them, we may pause to consider very briefly the relations between the General and his troops—between the leader and the led. The subject would require several lectures in itself, and has been the theme of many books; it is certainly an important one for the higher commander, who must, as I have already said, have a real interest in humanity and human behaviour. What is it that brings about sympathy, or the reverse, between the crowd and its leader: is it his words, his actions or some mysterious emanation of his spirit; the prestige of his position, or simply the fact of a common purpose? The psychological relations of a modern army with its leader form an interesting study: the professional man-at-arms has given place to the hastily trained but better educated citizen; whether education has

had much effect on collective psychology is, however, doubtful. Modern developments have removed the General's person from the close contact with his troops of former days; broadcasting and television may perhaps restore it. Let us content ourselves here by saying that our General should have at least a touch, whether natural or acquired, of the showman or impresario. The pomp and circumstance of war have departed altogether from the battlefield; but off it, and sometimes even on it, a little showmanship is still of value: to run an item at a tattoo is not bad training for a commander. Read, for instance, how the young Bonaparte at his first success—the capture of Toulon, built a battery in such an exposed position that his superiors said that no-one would be found to man it; he put on a notice-board "The Battery of Men Without Fear," and it was always fully manned. Read also of the ceremonial with which the Emperor Napoleon presented eagles or decorations to his troops; or how the French General Gouraud reviewed a division on the beach at Gallipoli by moonlight—the enemy being too close for daylight parades. The British are inclined to distrust any exuberance of display in their commanders, who in their turn are for the most part unlikely to give way to it; but they have usually known the value of the right gesture or word at a crisis—witness Haig's ride up the Menin road on the critical day of the Ypres battle, or his famous "Backs to the wall" order.

Now let us examine the present conditions in which generalship has to be exercised, compare them with the past, and see if we can deduce any means of improving our output of commanders. Since war is prepared in peace, current political and social conditions must have a great influence on war and on generalship. The pace and progress of modern invention is of course the greatest factor in making future conditions of war so fluid and so uncertain. That means that a high commander must more than ever keep a flexible and open mind.

Military conditions, at any rate in Europe, while producing a high level of general professional competence, have been unfavourable to the growth of great generalship ever since the Germans under Von Roon and Moltke democratized and professionalized war some seventy-five years ago. The conditions they created—great masses of partially trained men, limited the possibilities of manœuvre; the fact that war started at full blast immediately mobilization was complete meant that there was little time for Generals to train themselves to new conditions or for the lumber of peace-time leaders and peace-time ideas to disappear before they could do much damage. The size and complexity of war has put its direction in the hands of a number of specialists rather than one outstanding general practitioner; while its vast expense and the

extent of the upheaval caused to national life makes the intervals between great wars longer, so that there is even more time than usual for the lessons of the last war, on which all armies train, to become stale, flat, and unprofitable. Much of the really original matter in an army is lost by evaporation in peace, when only the safe, steady, and ordinary rise: in peace there are too many regulations, too little independence of thought. Conditions in the immediate past have thus not been favourable to the growth of great generalship; I am going to suggest later on that in the immediate future they may be.

Before I go further, however, I should like to point out to you two peculiarities of the British Army. Firstly, the British Army has to a certain extent still kept its amateur status. You cannot, with voluntary service, have a wholly professionalized army of the modern type; moreover, it still has to be prepared for the "village cricket" type of campaign as well as for the "timeless test" type of the Great War. The timeless test suits the safe and cautious batsman who can keep an end up and take no risks; village cricket requires the light-hearted type, who will take chances and hard knocks on a rough wicket. We never seem quite to have made up our mind which type we want to cultivate. The other peculiarity about the British Army is its divorcement from the ordinary life of the nation, with which the Territorial Army is practically its only link, and that a weak one. This divorcement, which does not obtain in Continental nations with universal service, is naturally undesirable in these days when wars affect the whole life of a nation and demand its united strength. A knowledge of the psychology of the ordinary un-military citizen, of whom in the future all great armies will be composed, should be part of the knowledge of their leaders—the professional officers. But it is particularly as regards the higher commanders and their relations with statesmen that I wish to enlarge a little. At a time when their relations should be at the closest, the tendency is, as a result of the happenings of the late War, for them to become even further estranged. Everywhere in books on the War narrowness of outlook and professional pedantry are charged against the soldiers, who in their turn are inclined to ascribe their difficulties to ignorant "political interference." On the merits of such controversy I have no intention of entering. I only wish to point out to the Army that their most distinguished commanders had very considerable political experience before they became successful soldiers. "Political" Generals are anathema to the military tradition; yet an imposing list of them can be made: Cromwell was for many years a member of Parliament—remarkable chiefly for the untidiness and eccentricity of his dress—before he took to soldiering; Marlborough had had far more experience of political intrigue than of military service when he began

his career as a conqueror; Wellington had been a member of both Irish and British parliaments before he took up his first military command; Sir John Moore sat in parliament; so did Craufurd, the leader of the Light Division; and Graham, afterwards Lord Lynedoch, founder of the "Senior," who first took to soldiering at forty-four.

It is, in fact, difficult to find an example of a great commander whose experiences and career have been purely military. Alexander, Napoleon, and other warrior-kings were of course heads of the State as well as leaders of its armies. In ancient Rome, to have passed through all the ranks of the magistracy, i.e. of the civil administration of the State, was an indispensable qualification for command in the field. In classical Greece, soldiers and statesmen were interchangeable: you may recall the story of Cleon and Nicias in the Peloponnesian war between Athens and Sparta; the demagogue Cleon, leader of the opposition, fiercely criticized in the Athenian Senate the conduct of a campaign by the cautious conservative Nicias; the latter, thinking to corner his opponent, turned on him with a challenge: "Go you then and take command and see if you can do any better." Unfortunately for Nicias, and unfortunately for Athens in the long run, Cleon won a striking though lucky victory.

Interchangeability between the statesman and the soldier passed for ever, I fear, in the last century. The Germans, as we have seen, professionalized the trade of war, and modern inventions, by increasing its technicalities, have specialized it: it is much the same with politics, professionalized by democracy. No longer can one man hope to exercise both callings, though both are branches of the same craft, the governance of men and the ordering of human affairs. In acquiring proficiency in his calling, however, the politician has many advantages over the soldier; he is always "in the field," while the soldier's opportunities of practising his trade in peace are few and artificial; he may be compared to a man learning to be a M.F.H. by practising with an electric hare in a riding school, varied by an occasional drag-hunt in the open—once every ten years for a Corps Commander since the War. The politician, who has to persuade and confute, must keep an open and flexible mind, accustomed to criticism and argument. The mind of the soldier, who commands and obeys without question, is apt to be fixed, drilled, and attached to definite rules. The comparison need not be taken further; but that each should understand the other better is essential for the conduct of modern war. It is perhaps worth mentioning that probably the best and wisest strategist of the late War, Von Falkenhayn, took most account of political considerations.

Now, for a moment, let us contrast modern conditions of battle

with those of the past, and, in order to do so, take one or two snapshots from history. Marlborough at Blenheim, after placing the batteries himself and riding along his whole front, lunched on the battlefield under cannon fire, waiting for his colleague Eugene on the right flank, four miles away—a great distance for those days. Napoleon at Austerlitz could see with his own eyes the enemy expose himself hopelessly and irretrievably to the prepared counterstroke, and could judge the exact moment at which to launch it. Wellington at Salamanca, having seen his opponent make a false move, had only to issue a few verbal orders when he could turn with assurance to the Portuguese representative with the remark : " *Mon cher Alava, Marmont est perdu.*" Even at Sedan, sixty years later, Moltke and his Imperial Master could watch practically the whole agony of the French army from a small hill close by. In the conditions of the late war no battalion commander, launching his reserve company, had anything like such a clear picture of the situation as any of these, while the Commander-in-Chief was not on the battlefield at all, but sitting in an office many miles back or restlessly pacing the garden of a château waiting for news that seemed never to come, and which, when it came, was usually misleading.

So far I have given you a rather gloomy impression of the present conditions of generalship. Now for some encouragement as to the future. There are new forces to handle, both on the ground and in the air, with potentialities that are largely unexplored. Some of them were partially exploited in the late war, but have since been greatly improved and extended ; some have been only recently developed ; some are still wholly untried. The commander with the imagination—the genius in fact—to use the new forces may yet have his name written amongst the " great captains," but he will not win that title lightly or easily. Consider for a moment the qualifications he will require : on the ground he will have to handle forces moving at a speed and ranging at a distance far exceeding that of the most mobile cavalry of the past ; a study of naval strategy and tactics, as well as those of cavalry, will be essential to him ; some ideas on his position in battle and the speed at which he must make his decisions may be derived from the battle of Jutland, but very little indeed from operations in the Long Valley and on the Basingstoke Canal, or indeed in any of the training areas available to the Army at home. Needless to say, he must be able to handle air forces with the same knowledge as forces on land. It seems to me immaterial whether he is a soldier who has really studied the air or an airman who has really studied land forces ; it is the combination of the two, never the action of one alone, that will bring success in a future war. It sounds as if we require a superman—a master of strategy and tactics at sea, on land,

in the air ; but there is not really such very great difference between the three. In addition to this his studies must have a background of solid common sense, and a knowledge of humanity, on whose peculiarities, and not those of machines, the whole practice of warfare is ultimately based.

I have tried to put before you some reflections on the essentials of generalship and on the conditions in which modern generalship has to be exercised. I propose to discuss in the last part of this lecture what can be done in peace towards the production of a good cadre of higher commanders. As I have pointed out, the days of frequent and leisurely wars, when it was possible to select and prove commanders in the earlier stages, are over. Peace training is a poor substitute, but we must make the best of it. It is, I think, of little use setting out with the idea of raising a " great captain " : the " great captain " is what is known in scientific parlance as a " sport," i.e., in the words of the dictionary, " an animal which varies suddenly or singularly from the normal type, and cannot usually be perpetuated." But obviously the higher the normal type, the more likely it is to produce a valuable " sport." A man may buy or breed from the best class of bloodstock for many years, and still not get a Derby winner ; but if his purchases are made at a hunter show or cart-horse parade, it is quite certain that he never will. What we must aim at is to produce a high normal type of commander. What can be done to further that desirable end ?

In considering the problem, we have to take into account the raw material, the system of training, and the method of promotion and selection. We have plenty of good material : no-one can pretend that the profession of arms attracts the highest quality of brains, but there is amongst those who join the Army a potentially high level of robust common sense ; I say " potentially " because common sense, like any other quality, can only be fully developed by training. Again, we have in our system of brevets probably as good a method as can be devised in peace for selecting our future leaders early and securing their promotion at a suitable age. I suggest, however, that we use it too timidly ; that the number of promotions by brevet might be increased and the age lowered. An argument often advanced against any increase of promotion by selection is that it is essential to keep a contented corps of officers ; and this is too often taken to mean that the average, reasonably efficient, reasonably hard-working officer must never see a more efficient and more lively junior go over his head. Personally, I believe that an increase in the proportion of promotions for merit would do much both to attract more brains into the Army and to raise the level of work and efficiency all round. As I said earlier, our aim should be

that those selected for promotion to Major-General should include at least a considerable proportion of live, energetic broadminded Brigadiers and Colonels of about forty to forty-five years of age. That is, I fancy, the approximate age at which a man in the business world forces himself out of the " plodders " ranks into the high positions, if he is ever going to do so. Though there must be many difficulties in the way, it is obviously desirable that officers of the British and Indian armies should be on a common list for further advancement after they reach the rank of full Colonel.

Our opportunities of training for war are good, so far as peace conditions allow; but again I do not think that we make full use of them. It is quite true that our training grounds in this country are hopelessly inadequate and that the weakness of our peace strengths at home makes much of our training so unreal as to be almost farcical; but abroad, although the era of small wars is apparently over, we still have unrivalled opportunities of training. Yet we concentrate our most important efforts, mental and material, on training at home; so much so that officers rejoining the home establishment after a period of service abroad are often reported on as " lacking in experience of modern methods." Should we not be wiser to make more use of the greater opportunities in our foreign stations? It is only a few days now by air to Egypt and India. It is quite possible for the C.I.G.S., D.M.T. and other senior officers to visit manœuvres in those countries, where something like realism in training is still possible.

Now I come to the real heart of the matter—the atmosphere, traditions, and spirit in which and on which the Army lives and by which its whole training is directed and coloured. A French philosopher has said " man's two great concerns since he has existed have been, firstly, to create a network of traditions; and afterwards to destroy them when their beneficial effects have worn themselves out. Civilization is impossible without traditions and progress impossible without the destruction of these traditions." I suggest that we have come to a stage when we must reconsider some of the traditions and methods on which the training of our leaders is founded: we are overhauling and modernizing the machinery of war, but we are doing little to modernize the directing brains—the officer. If we want to have a high level of command at the top, we must begin right at the bottom before the good, keen young subaltern starts to become bored, disillusioned, parochial and barrack-bound. The Jesuits, I believe, claim that if they can have the training of a child for its first five years, no subsequent training can destroy their influence. Much the same applies to the Subaltern; it is the training at the R.M.A. and R.M.C. and his first few years with his unit that

colour his whole career. I suggest that in this first vital impression there is at present too much stress on drill and routine, on spit and polish, on details of the regulations and of dress, at the expense of mental liveliness and independence of thought.

It is easy enough to indulge in vague generalities about " a freer atmosphere " and the modernization of education ; it is quite another matter to make practical proposals for securing them. I feel, therefore, that since I have so far ranged like a rather wild and undisciplined spaniel over a great deal of ground, and since such game as I have put up has mainly been out of shot, it is now incumbent on me to come into heel a little in the hope that we may take home one or two birds for the pot.

The average officer is from ten to thirteen years a Subaltern. No one can suggest that it takes the good keen intelligent officer more than five or six years at the most to master fully the regimental duties of a Subaltern, so that for a good deal of time in that rank he should be broadening his mind and improving his knowledge away from his unit. We are fortunate as an army in having plenty of scope for junior officers —in Colonial forces, with the Territorial Army, and elsewhere ; and few commanding officers nowadays put any obstacle in the way of a Subaltern seeking to " better himself." But there are, I think, certain directions in which these opportunities might be extended and improved. There could be no better training for the junior officer than to serve with the Royal Air Force for a few years, yet for some reason attachment to the Air Force is not very popular and not specially encouraged. I would like to see a successful period of attachment to the Air Force count as highly towards nomination for the Staff College or accelerated promotion as a successful adjutancy now does. Interchange of officers between arms is promoted in principle, but it is very seldom carried out in practice : such attachments should be *ordered* by the War Office, be frequent, and be regarded as a recognition that the officer concerned was being considered as a likely candidate for early advancement in his profession. It may be Utopian, but I would like to see explored the possibility of, say, a years exchange between a certain number of keen Territorial officers, employed in some not too technical professions, and a similar number of regular officers, who would thus get an insight into civil life and the mentality of the average civilian. Again, if a young officer, certified by his superiors as fully trained in the duties of his rank, is prepared to go on half-pay or on no pay, in order to travel or explore or refresh his mind by any useful relief from a purely military existence, I think it would be worth while to overcome the inevitable objections of the finance branch and let him go. A young hunter benefits

far more from a run at grass than an old one : we turn our Generals out for years at a time, at an age when they have become so accustomed to their warm stall, regular feeds and daily grooming that they don't know what to do with themselves at grass and pine for harness again ; but to give a Subaltern or Captain a spell of freedom is almost unheard of.

My next suggestion costs nothing at all, but I believe it would effect a real improvement in the keenness and standard of training of all officers. It is that every officer of five years service and over should be reported on annually as to the rank he is capable of holding in war, and should then as far as possible be trained in the duties of that rank, irrespective of the rank he actually holds. Thus a Subaltern reported as fit to command a squadron, battery or company on service should be treated as a squadron, battery or company commander at all tactical exercises without troops. Similarly a Captain or Major, or even an exceptional Subaltern of over ten years service, reported as fit to command a battalion in the field should be trained as such by the Brigadier. Field Officers reported as fit to command brigades should similarly be trained as such by the divisional commander. It should also be possible to arrange occasionally for these officers to hold their " war " ranks during an exercise with troops. I think that some such system might do much to increase the keenness and efficiency of the good officer. It might also help to place the Staff College in better proportion as an institution primarily for the training of Staff Officers and not the " onlie true begetter " of higher commanders.

I also suggest a stronger effort to broaden the basis of the subaltern's knowledge and education. The entrance examination for Sandhurst or Woolwich includes a paper on general knowledge, and the syllabus at these colleges includes a certain proportion of non-military instruction, given, however, almost entirely by military instructors. But once an officer joins his unit, his general education ceases—except for his own efforts—and his subsequent instruction is purely military. I do not think this is either necessary or desirable, as it must tend to narrowness of outlook and interests. As a start towards encouragement of general education, I suggest that a non-military subject for winter study be set in addition to, or in substitution of, the present military history campaign.

So much for what one might call the pre-natal treatment of the higher commander. As regards his training when he has finally reached General's rank, I will make two proposals. No one can pretend that, under present conditions, he gets sufficient practice in command in the field : manœuvres are expensive and therefore infrequent, and at home lose much of their value by reason of the weakness of all units ; but

there seems no reason why large-scale Signal Exercises, in which all headquarters down to, say, battalions are represented at full strength, should not take place at much more frequent intervals. They would at least preserve the machinery of the higher command from much of the rust that it accumulates at present. My other plea is that the higher commander should have a much closer acquaintance with the work and ideas of the Air Force. In all future fighting, air action and ground action will be complementary, each dependent on the other. No one should, I consider, hold the rank of higher commander without having had at least six months really close association with the Air Force within a few years of his promotion. With good will between the two Services, there should be no difficulty in ensuring this.

Whatever the methods of education or training, we must never lose sight of our essential mental foundations—common sense and a lack of pedantry. Our life in these democratic and professional days is so set about with regulations of every kind—civil and military, that it is continually necessary to remind oneself that war is not a matter of rules. The higher commander who goes to Field Service Regulations for tactical guidance inspires about as much confidence as the doctor who turns to a medical dictionary for his diagnosis. And no method of education, no system of promotion, no amount of common-sense ability is of value unless the leader has in him the root of the matter—the fighting spirit. Whatever mistakes they committed, however they differed from each other, the great leaders of the war, civil and military, such as Clemenceau, Foch, Lloyd-George, and Haig, had in common an unconquerable spirit. As one of them has said: "No battle was ever lost until the leader thought it so." This is the first and true function of the leader—never to think the battle or the cause lost.

One word more. The pious Greek when he had set up altars to all the great gods by name, added one more altar, "To the Unknown God." So, whenever we speak and think of the "great captains" and set up our military altars to Hannibal, Napoleon, Marlborough and their like, let us add one more altar: "To the Unknown Leader": that is to the good company, platoon or section leader, who carries forward his men or holds his post and often falls unknown. It is these who in the end do most to win wars. The British have been a free people and are still a comparatively free people; and though we are not, thank Heaven, a military nation, this tradition of freedom gives to our junior leaders in war a priceless gift of initiative. So long as this initiative is not cramped by too many regulations, by too much formalism, we shall, I trust, continue to win our battles—often in spite of our higher commanders.

DISCUSSION.

LIEUTENANT-COLONEL R. MACLEOD, R.A.: I should like to ask the Lecturer whether he does not think that the time has now come to consider the provision of a military university, with a course of four years.

Secondly, in view of the conditions of modern battlefields, where the rear may often be the scene of the severest fighting, has not the time come in Divisions, say, to appoint a commander to take command of the services behind the forward fighting areas.

With regard to training grounds, there appears to be an excellent training ground in the United Kingdom, in the Highlands of Scotland. A good deal of training in primitive types of warfare could be carried out there, instead of abroad.

Further, now that non-commissioned officers are so much more highly trained and more intelligent, has not the time come to put them into young officers' commands to a greater extent, thus leaving the young officers free to take courses and keep their minds elastic and fresh ?

CAPTAIN R. H. A. LUCAS: The Lecturer spoke of broadening the young officer's mind and of the very small amount of non-military training that he receives. I suggest that at the present time both Sandhurst and Woolwich are rather unsatisfactory and half-hearted attempts at a broader education. In the old days they were purely military; now they do a certain amount of non-military work, but it is not enough. If we are going to have a non-military education at all we should have what the previous speaker mentioned—a military university, almost entirely non-military, and the purely technical side of an officer's work should be taught him in his first few years of service.

CAPTAIN E. ALTHAM, R.N.: In the course of a Lecture on The Higher Study of War, given here just six years ago by Admiral Sir William Boyle, now Lord Cork and Orrery, he questioned whether the Staff Colleges should be the highest schools for such study. He rather suggested that possibly the Army try to cram too much into the Staff College period of a man's life, instead of affording him an opportunity at a rather later stage, when perhaps he is more ripe for it, to study war and the higher attributes of command. I do not know whether the Lecturer was hinting at something of that kind to-day. One realizes, of course, that the main obstacle to any change of that sort is finance; but, after all, difficulties with regard to finance can be and are overcome in time. It would be interesting, I think, to hear from the Lecturer to what extent the Army do favour a change in the present curriculum or whether they consider that the Navy is wrong in waiting until a man is a Post-Captain or a senior Commander before he goes to the War College for the higher study of war. Of course there is the Imperial Defence College; but, presumably owing to limitations of accommodation and finance, at present only a comparatively favoured few go there.

GENERAL THE HON. SIR J. F. GATHORNE-HARDY: I think that all lectures of this kind give us avenues in which we can see lines for improvement, and perhaps no lecture that I have attended recently has given more such avenues, but it must be remembered that those avenues lead either to money or to time, and both are very difficult to find.

I dare say that a great many regimental officers do not quite know how much time the staff of divisions and brigades do allot to the very thing they are all wanting. I happen to know the Lecturer's own division, and you know what his views are. He has an absolutely admirable staff officer, who gives every hour that he can spare

from keeping himself fit to the very things we have been discussing. He is now, running a course for broadening the minds of young officers—a most admirable course, but I myself do not believe that it is possible, within the scope of the Army staffs, to do more in that direction than is being done at present. Therefore I am forced to the conclusion that money is required, either for some form of school, as has been suggested here, or to enable these officers to go away and broaden their minds outside the regular routine.

I admit the desirability of some form of wider education; but I do ask you, when you realize how little is done, to remember those people who are trying to eke out the money that is available. It is quite easy to say "We want this" and "We want that," but it is extraordinarily difficult to get it, and I do not believe, from what I know of the Second Division, that it would be possible for them and their staff to do more to meet what the Lecturer himself requires and what I know many of you require, with the money and the staff available at present.

THE LECTURER:

With regard to a liberal education, the question of a course at a university or anything of that kind is a matter of time and money.

As to Woolwich and Sandhurst, I rather agree with the speaker who intimated that the course there at present fell between two stools: it is not entirely military, and the non-military education is not entirely satisfactory. I know that the present Commandant of the R.M.C. is very closely occupied with the problem of improving the education there by all means possible.

With regard to the Staff College, my point really was that I think the Staff College looms rather too much in the opinion of the ordinary regimental officer as the only possible way of reaching higher rank, and that an officer who has not passed through the Staff College is inclined to consider that the prospects of higher rank in his military career are more or less at an end. I think that this is not, and should not be true, and that it is not a good thing for the Army that many should so regard it.

As to the question of a training ground in the Highlands, I am sure it would be a most popular measure with the whole Army if it, or a large portion of it, was transferred to the Highlands some time about the middle of August! Whether it would be quite so popular with those who have rented grouse moors and deer forests I do not know! There is in the South a training ground which is almost as good, i.e., the New Forest, but it is very difficult to get permission to train even a battalion or so there.

One speaker raised the point of N.C.O's doing the work of junior officers. I think they do that to a very large extent already, and I quite agree it is right that they should do so. A great proportion of senior non-commissioned officers were promoted to commissioned rank shortly after the outbreak of the Great War, and it is very right that they should be trained as far as possible in peace with that in view.

THE CHAIRMAN.

The Lecture and discussion this afternoon do not lend themselves very readily to the process known as summing up, but the subject itself is a provocative one, and I should like to make a few closing remarks.

General Wavell's *bon Général ordinaire* can be made, given good material to work on; and we produce him in fair numbers. He is the backbone of the Army. The difficulty, as always in peace time, is to ensure that the ordinary General does not become an obstacle to the rise of the General who is better than ordinary. That is a matter for bold selection. But the exceptional leader, the man that we want to get to the top in peace and to find at the top in war, is born as well as made. However many of the hundred and one desirable attributes he may possess or acquire, he is not the man we want unless he has in him that divine spark which sets the born leader apart from the common run, and which cannot be synthetically produced. That being so, what we have to do is, first, to ensure that conditions exist favourable to the discovery and the growth of the potential leader; and, secondly, to provide a higher atmosphere in which the high commander, having at last reached that position, can keep in bright working order the qualities that got him there.

With regard to the first of these provisions, the Lecturer has put forward some useful suggestions. But of the second, and to my mind more important provision, he has, possibly from motives of discretion, said little; and it is in that provision that our present system seems to me to fail. To keep a high commander up to the mark two things are most desirable, if not essential: first, practice in command in the field; and, secondly, the habit and constant exercise of real responsibility. Practice in command in the field we can, unfortunately, provide only at very rare intervals, for want of men and of money; but we may hope now that things will improve in that respect. As regards the other essential, there are in our Army certain commands abroad where the commander has got real responsibility, where he functions on terms of equality with his opposite numbers in responsible positions in other walks of life, and where he can train his troops under real conditions for definite tasks.

But at home the high commander has no such scope. In the Home Army, command and control are so highly centralized in the War Office that there is no room for the exercise by the high command outside of executive responsibility commensurate with his rank; and, as he has no consultative responsibility either, he is apt never to be really in touch either with events or with the central policy. That makes it difficult: difficult for the high commander to keep himself both tuned up and tuned in; and difficult for the State to get full value from his knowledge and experience. The shifting of values, the shifting of responsibilities—no doubt difficult to avoid in an army like ours which has been consistently reduced in size for so long—has resulted in a definite weakening in the higher commander link in the chain of command. That I think is a pity. It is capable of readjustment, however, and I hope that, in the more spacious times that we are told are coming, some readjustment may be found both advisable and possible.

The customary votes of thanks to the Lecturer and to the Chairman were carried, by acclamation.

THE RESERVES AT LOOS

By Brigadier-General Sir J. E. Edmonds, C.B., C.M.G.

THE publication of extracts from the diaries of the late Field-Marshal Earl Haig with reference to the battle of Loos, 1915, in the first volume of Mr. Duff Cooper's *Haig*, has induced Major the Hon. Gerald French to attempt to explain away the comments made in them on his father, then Sir John French, the Commander-in-Chief of the British Expeditionary Force. In writing the life of the Earl of Ypres, Major French obviously did not trouble to look at the second edition of his father's 1914, in which important corrections had been made to the first edition, and now in writing about Loos he has evidently not consulted the British Official History, Volume—1915, ii, or the French Tome iii, in which the battle is described. For in the former will be found, based not on private diaries or hearsay, but on the official war diaries, orders, messages and *procès-verbaux* of conferences, the whole story told at greater length than Mr. Duff Cooper gives it; and in one or other of the two official volumes most of the points are settled which Major French now seeks to re-argue. Before publication seven years ago, the proof of the Official History was submitted to the late Field-Marshal Sir William Robertson, who was Sir John French's Chief of the Staff in September, 1915, and other high officers at that time at G.H.Q. or in the First Army, and was accepted by them as correct.

Before discussing the points raised by Major French, one story, which is not in the Official History, will be told, because it serves to throw a good deal of light on the events which followed. Soon after the War, Sir William Robertson informed me (I was a fellow-student with him at the Staff College) that " the whole trouble at Loos arose from the determination of the Commander-in-Chief to order—if not to lead—forward the three reserve divisions himself, in order personally to administer the *coup de grâce*." He wanted to be able to write in his Despatch, ' at this moment I ordered (led) forward my reserves.' " This statement of Sir William Robertson is in agreement with the undisputed fact that Sir John French insisted, to the dismay of his General Staff, on leaving G.H.Q., St. Omer, to place himself where he could not command his Armies, except with long delays in transmission of his orders and in the receipt of intelligence, but where he could

conveniently command the three reserve divisions (XI Corps), "assembled in readiness for the battle in the area North and South of Lillers" (p. 272).[1] To give the words of the Official History: "Sir John French, taking only his personal Staff, had unexpectedly gone forward on the previous evening [that is the 24th] to the Château Philomel, some three miles South of Lillers, where only the normal French telephone system was available for communication with his headquarters staff nearly twenty miles away at St. Omer, and there was no communication by wire with his Armies."

In the weeks before the battle there had arisen a grave difference of opinion between French and Haig as to the employment of the general reserve in support of the First Army attack. French, as Sir William Robertson's statement shows, wished to retain it in his own hand until the last possible moment and only to put it at Haig's disposal when in his, French's, judgment its presence in the battlefield was required. Haig feared in that case that it would be held too far back to become available at the critical moment, and wished that it should be placed under his control, before the battle actually began. On the 7th August, G.H.Q. had informed the First Army by letter, that the Cavalry Corps and two divisions of the XI Corps would be available for the operations, but that these would be held in general reserve under the orders of the Commander-in-Chief. On the 26th, after a conference with General Foch at which Haig was present, French told him to make his plan of attack on the understanding that the two divisions would be at hand and placed at his disposal when needed. Though this arrangement was not entirely satisfactory, Haig felt himself justified in placing all the six divisions of the two corps which were to make the main attack in the first line of assault, without retaining any Army reserve. It would seem that General Joffre too had his doubts about the wisdom of French's decision to keep the reserve under his own control. On the 12th September, he wrote to G.H.Q. that, if Sir John French kept his reserve divisions too far back, "they would run the chance of arriving too late to exploit the success of the leading ones. It is indispensable that these divisions are put *before the attack* at the absolute disposal of General Haig." Two days later he repeated this warning at a conference at Chantilly. During a discussion on the exploitation of any success achieved, it is recorded in the French *procès-verbal*, "Field-Marshal French intended to reserve to himself the employment of the three divisions (XI Corps) in second line and to place them behind the British First Army. General Joffre

[1] The references are to the pages of the Official History, "France and Belgium," 1915, Vol. ii.

insisted that he should put these divisions at the complete disposal of this Army before the offensive ; the experience of the fighting in the month of May had clearly demonstrated that this is the only means of ensuring their intervention in time to exploit a success." (Tome iii, p. 281).

In spite of these expressions of opinion by General Joffre, French announced to Haig at a conference on the 18th September that the number of troops at Haig's disposal were sufficient to carry out the initial assault and secure any localities won, and that he had decided to keep the whole of the general reserve in the Lillers area, more than sixteen miles behind the battle. Haig's objections were now supported by General Foch, who suggested that the reserves should be placed about 2,000 metres (one and a quarter miles) behind the corps reserve. As it had been decided to dispense with corps reserves, Haig then asked that the two divisions might be deployed in rear of Vermelles, some 2,000 yards behind the assaulting divisions. French repeated that he would keep the whole of the general reserve in the Lillers area until the battle had sufficiently developed to enable him to decide if and where it was needed. On the next day Haig wrote a formal request that the general reserve should be assembled nearer the battle front and asked that " the heads of the two leading divisions of the XI Corps should be on the line Noeux les Mines-Beuvry [that is 4–5,000 yards behind Vermelles] by daylight on the 25th." To this French replied the same evening : " two divisions of the XI Corps will be assembled in the area referred to in your letter by daybreak on the 25th September." With this Haig had to be content. As, however, French had directed that the reserves were not to reach the Lillers area till the 24th, Haig was still afraid that they would not be rested and ready to move off by daylight next morning. Accordingly he sent his chief staff officer to see the C.G.S. and urge that they should be on the line indicated by the night of the 24th-25th. Robertson's reply seems to have been reassuring. But the event proved that Haig's forecast was right.

There is no mention in the *procès-verbaux* of the conferences of any suggestion of holding back the general reserve because the French, who were attacking without gas, would not begin their advance until after the First Army. Such a course seems contrary to the whole tone of the proceedings ; but the necessity for it is one of the reasons advanced in Sir John French's Despatch, quoted by his son, as an excuse for keeping a strong reserve under his own hand.

The 21st and 24th Divisions had left England on the 9th September and 30th August respectively, only two or three weeks before the final date fixed for the battle. They had been concentrated West of

St. Omer, had begun their move to Lillers on the 20th September—marching by night to avoid enemy aeroplane observation, and had arrived in areas, the fronts of which—marked approximately by Allouage-Busnes—were abreast of Lillers on the morning of the 23rd. During the night of the 23rd–24th, a message was sent to Lieut.-General Haking from G.H.Q. for the 21st and 24th Divisions to move between 6 p.m. on the 24th and 5 a.m. on the 25th to the line selected by General Haig, which, no doubt, meant that the heads of the divisions should be on the selected line by 5 a.m. on the 25th but that the movement was not to start before 6 p.m. on the 24th. The shortest distance any of the troops of the two divisions would have to march was ten and a half and nine miles respectively; the longest, for the tails of the fighting columns, about fifteen and fourteen miles. The XI Corps order, issued at 9.30 a.m. on the 24th, gave the starting time at the divisional starting points, at the heads of the areas, as 7 p.m. This of course entailed previous marches by units to reach their starting point. Allowing, according to experience, two miles an hour, including the hourly ten minutes' halt, for a night march on unknown and unlighted roads, the heads of the columns should have reached their destination at latest about midnight. Actually, owing to delays caused by meeting and crossing traffic and by enforced halts at the level crossings on the railway lines, described in the Official History, the heads of the columns did not get in until between 1 and 2 a.m., and the tails not until about 6 a.m. G.H.Q. had made no arrangements for having the roads cleared in order that the divisions might have an undisturbed march.

Haig had expected that the two divisions would be rested and fed and ready to advance by 6.30 a.m. on the morning of the 25th, when his troops moved to the assault. They were not ready; they were not even handed over to him. At 7 a.m. and at 8.45 a.m. on the 25th, Haig sent messages to French—by despatch rider, for the Commander-in-Chief had marooned himself at Philomel—reporting first the success of the assault, and then that the reserve brigades of the divisions engaged had already reached the German trenches or were on their way there, and asking that the reserve might be placed under his orders. Major French thinks that neither of these messages can have reached his father, "because his diary, always most punctiliously kept, contains no record of them." Both are however entered up in the G.H.Q. record, and also the two answers:—First, 9.30 a.m.—

> "21st and 24th Divs. will move forward to First Army trenches as soon as the situation requires and admits. On arrival there they will come under the orders of the First Army,"

and second:

> " 10.25 a.m. Commander-in-Chief will see First Army commander this morning regarding placing further troops at his disposal."

He did see him. Major French says it was " at 11 a.m." not " about 11.30 " as the Haig diary records. The objection is immaterial because French merely told Haig that he would *arrange* to put the reserve divisions under him ; he then went off to deliver his orders personally to Lieut.-General Haking (XI Corps.). According to the XI Corps diary he did not give an executive order to place the 21st and 24th Divisions at Haig's disposal until after mid-day ; the Corps written order for them to move, which was already drafted, is timed 12.30 p.m. The order had of course to be forwarded to the divisions, which meant further delay. It was not until 2 p.m. that Haig heard definitely, from Lieut.-General Haking, that they were under his orders. To say, as Major French does, that

> " to all intents and purposes they [the 21st and 24th Divisions] were under his [Haig's] orders from 11 a.m. onwards "

is inexact. To write, as Sir John French did in his Despatch of the 15th October, 1915, that the 21st and 24th Divisions were put at the disposal of the G.O.C. First Army at 9.30 a.m., " who at once ordered the G.O.C. XI Corps to move them up in support of the attacking troops," is contrary to fact, and was rightly the subject of an official protest at the time from Haig to G.H.Q. Besides, even 9.30 a.m. was at least three hours too late. However, Lieut.-General Haking, who very properly had opened his headquarters forward at Noeux les Mines at 5.30 a.m., did to some extent act on the 9.30 a.m. G.H.Q. order ; for after receiving it, he directed the two divisions to assemble three miles nearer the front. Again, naturally, it took more than an hour for a G.H.Q. order to reach the troops, and it was not until 11.15 a.m. that the leading brigades moved off. This meant that it would be another three hours at least before the divisions, with their tails closed up, had assembled in the new position Mazingarbe—Vermelles, still about two and a half miles behind the original British front. Actually, owing to the usual congestion in a battle area, the leading brigades did not arrive at their new line until about 3 p.m. ; even at 6 p.m. " all battalions had not yet reached their positions of deployment." Haig could not at 9.30 a.m. give orders to the 21st and 24th Divisions, for they were not under him ; he could only warn his corps commanders that the divisions were about to move up, and he did so. To impute a three hour delay (9.30 a.m. to 12.30 p.m.) to Haig, as Major French does, is a charge that will not bear investigation.

Thus, so far from being ready to advance into the battle at 6.30 a.m. on the 25th September, the divisions were barely ready at 6 p.m. ;

the loss of time was not three hours, but already twelve. The difficulties and delays which invariably occur in moving troops close behind a battle front should have been foreseen by the Commander-in-Chief; infantry divisions cannot be moved swiftly from one place to another on word of command or trumpet call, or the wave of the sword, like a cavalry regiment.

> Major French thinks that at 6 p.m. at the end of a September day, "there must still have remained several hours of daylight in which to cover the few miles between their overnight position and the line."

The division had still to go two and a half miles to the old front line and then there was another two miles, at least, over old trenches and shell holes, to reach the new front line. The four brigades of the 21st and 24th Divisions which made the attack on the 26th did not actually move forward until 8.45 p.m., 9.30 p.m., 10 p.m. and 12 midnight, respectively, and then in torrents of rain. The leading troops did not reach the Lens-La Bassée road until 3 a.m. Major French thinks that to say they had "a long night march" as the Haig diary does, is "more than an exaggeration." In the state the men were after four night marches in five days, most infantry soldiers will agree that it was a very long one to ask of the brigades. Had there been no halt at Lillers, the 21st and 24th Divisions might have been in position, well rested, on the morning of the 25th. Major French can hardly contest this.

Unless he can produce evidence which is better than the documents quoted in the British and French Official Histories, any blame for the 21st and 24th Divisions not being on the Noeux les Mines-Beuvry line at 6.30 a.m. on the morning of the 25th September, ready to advance at once on orders from the First Army or from the Commander-in-Chief present in person, or from his deputy, must rest on Sir John French.

Major French would like us to believe that his father was removed from France not on account of his handling of the battle of Loos, but by the spite of the Prime Minister, Mr. Asquith, who it is alleged bore a grudge against him for "revealing the great shell scandal." The shortage of high explosive gun ammunition was no secret either in the B.E.F. or to our Allies, or even to our adversaries, and in any case there was no petty malice in the make-up of Mr. Asquith. Major French requires to be reminded that nearly a year earlier, towards the end of 1914, a proposal was made by Lord Kitchener to remove Sir John French and replace him by Sir Ian Hamilton. The proposal was abandoned at the desire of General Joffre; in the following year the great Frenchman said not one word to save him. Sir John French at the time admitted that "though he was not himself conscious of

the strain of the war having had any serious effect upon his mental and physical powers, others might take a different view." Later he appears to have confessed to his friends that after a year of war he was unequal to the great burden of Commander-in-Chiefship. The late Lord Esher, who carried to Sir John French the message calling on him to resign, when I consulted him as to what should be put into the history, told me that French took the news not only with equanimity but even humorously, saying, " Well, I suppose I had better take the title of Lord Sent-homer (St. Omer)." It may be said that he went in good company. Most of the original commanders of the Allied Armies gave place to younger men : Moltke to Falkenhayn, Joffre to Nivelle, Conrad to Arz, Cadorna to Diaz, and the Grand Duke Nicholas, nominally to the Tzar, actually to General Alexeiev.

OIL FROM COAL IN WAR TIME

By Colonel W. A. Bristow, M.I.E.E., F.R.Ae.S.

On Wednesday, November 13th, 1935.

Vice-Admiral P. L. H. Noble, C.B., C.V.O., in the Chair.

The Chairman: We all know, probably, a little about what Colonel Bristow, as President of the Low Temperature Coal Distillers Association of Great Britain, has achieved in extracting oil from coal, and also in providing us with a smokeless solid fuel which, if generally used, would very much improve the health of our people.

At this time, when the security of our country is very much in the minds of everybody, his lecture cannot but be of very great interest.

LECTURE.

IN the last century this country made great material progress. The advance in general engineering and manufacture was revolutionary, and at the end of the Victorian era we had attained a position of considerable eminence. Our export trade was the first in the world, the quality of our goods was of the highest, and in many branches of industry we had hardly any rivals. During the same period we also found the time, energy, and money necessary to weld together the various peoples and territories which to-day constitute the British Empire—the greatest Empire and the greatest influence for progress, peace, and stability that the world has ever known.

This industrial achievement was effected mainly by the efficient use of our own coal, which was, with the steam engine, practically our sole source of power during the period. At the same time it constituted one of the chief essentials for our great iron and steel industries. The Navy and Mercantile Marine also relied on coal, as did the railways, which were responsible for almost the whole of our internal goods traffic.

The position, however, as you know, has now entirely changed. When the first procession of motor cars ambled clumsily to Brighton in 1896, who imagined the state of things we see to-day: countless millions of passengers, and millions of tons of goods being hauled on the roads by motor vehicles using oil fuels? When Wilbur Wright made his first flight in 1903, how many foresaw the extent of aerial transport

even as we know it to-day, when it is obviously still in its infancy? And I wonder how many discerned that the invention of this once-cumbersome, dangerous toy was destined to undermine, in eleven years only, the whole basis of our national security. To these inventions must be added the engine of Dr. Diesel, and the utilization of oil fuel for raising steam—two more developments which have contributed greatly to the revolution through which we are now passing. In 1914, 3 per cent. of the world's tonnage was using oil. In 1934 this figure had increased to 46 per cent., or fifteen times as much, and these figures do not include the change-over in naval tonnages. The world's railways are also beginning to use Diesel locomotives, and in the opinion of many railway engineers this is only the commencement of another considerable change-over from coal to oil. In addition, large numbers of industrial plants are using oil firing, and the importation of fuel oil for inland uses is still increasing.

The whole of these changes have come about by a series of advances in engineering which have completely revolutionized the power position throughout the world, and there is little or no sign that the pendulum will swing back to coal. As a result of these changes, coal is no longer the sole power-raising pivot upon which we revolve. In fact, it has been largely superseded. It is, therefore, all the more remarkable that this country still manages to retain its trade, wealth, and prestige, and its ability to lead the world in all branches of applied engineering.

IMPORTED OIL.

Why is this? The answer is simple. Oil has been brought to us in ample quantities and at an economic price. This vast change-over is being effected smoothly and almost unnoticed, except by those unfortunate people concerned with the getting of coal. And the trade and transport of this country is run as efficiently as in any other part of the world, in spite of the fact that we ourselves produce hardly any oil whatever. In 1934 we imported 2,752,036,000 gallons of petroleum and its products—an increase of about 311,000,000 gallons over the previous year. The accompanying table shows the amounts imported from the various sources of supply, the figures being taken from the Fourteenth Annual Report of the Secretary for Mines for the year ended December 31st last.

These vast quantities of oil are regularly distributed over the whole of the country, the quality conforming closely to the excellent specifications which have been established. The prices charged on the whole have been low, often below the cost of production, and at the same time the importation has yielded enormous sums to the State by way of duty.

IMPORTS OF PETROLEUM AND ITS PRODUCTS INTO GREAT BRITAIN AND NORTHERN IRELAND DURING THE YEAR 1934
IN THOUSAND GALLONS (Provisional figures).

Country of Consignment.	*Crude Oil.*	*Refined Products.*								**Grand Total.**
		Kerosene.	*Motor Spirit.*	*Other Spirit.*	*Lubricating Oil.*	*Gas Oil.*	*Fuel Oil.*	*Other Sorts.*	*Total.*	
BRITISH EMPIRE :—										
Trinidad and Tobago	10,975	*	59,967	—	—	—	34,366	—	94,333	**105,308**
India (British)	—	—	—	—	*	—	1	1	2	**2**
Straits Settlements and Dependencies	3,361	—	4,907	—	*	—	—	—	4,907	**8,268**
Sarawak	—	—	6,206	—	—	—	—	—	6,206	**6,206**
Canada	—	*	—	—	23	—	—	*	23	**23**
Irish Free State	—	1,537	620	6	26	5	9	*	2,203	**2,203**
Other British Countries	—	*	2	—	1	—	*	—	3	**3**
Total : British Empire	14,336	1,537	71,702	6	50	5	34,376	1	107,677	**122,013**
FOREIGN COUNTRIES :—										
United States of America	5,858	73,595	133,508	75	61,735	54,625	21,102	200	344,840	**350,698**
Mexico	114,199	22,667	58,729	—	9,444	923	80,021	—	171,784	**285,983**
Ecuador	6,488	—	—	—	—	—	—	—	—	**6,488**
Dutch West Indies †	23,476	10,358	472,359	6,343	1	9,796	370,864	—	869,721	**893,197**
Peru	82,528	—	8,900	—	—	315	6,063	—	15,278	**97,806**
Dutch Borneo	—	3,196	53,571	2,494	8	2	9	—	59,280	**59,280**
Iran (Persia)	216,539	59,768	225,920	—	—	18,825	99,883	—	404,396	**620,935**
Iraq	13,403	—	—	—	—	—	—	—	—	**13,403**
Egypt	—	.	4,631	—	*	—	*	—	4,631	**4,631**
Russia	—	7,090	29,817	562	21,034	3,580	3,519	—	65,602	**65,602**
Roumania	232	43,104	50,700	10,259	4,364	46,807	40,801	—	196,035	**196,267**
Poland	—	—	—	—	2,571	—	—	—	2,571	**2,571**
Germany	.	30	221	80	2,935	—	1,064	38	4,368	**4,368**
Netherlands	—	*	16,739	1	76	—	—	*	16,816	**16,816**
Belgium	—	*	152	—	904	28	*	400	1,484	**1,484**
France	*	832	*	*	301	2	7,890	6	9,031	**9,031**
Other Foreign Countries	1	1	1,429	—	28	*	3	1	1,462	**1,463**
Total : Foreign Countries ...	462,724	220,641	1,056,676	19,814	103,401	134,903	631,219	645	2,167,299	**2,630,023**
Grand Total	**477,060**	**222,178**	**1,128,378**	**19,820**	**103,451**	**134,908**	**665,595**	**646**	**2,274,976**	**2,752,036**
Total in 1933 *(revised)* ...	392,647	185,247	1,073,114	15,296	102,564	113,694	558,970	256	2,049,141	2,441,788

* Less than 500 gallons. † Includes Venezuela.

The advances made in engineering, based upon the use of oil, would have meant our relegation to a very limited position in the world if these great supplies of oil had not been made available for our use by the vision and energy of the great oil companies.

I have spent a little time in reciting some of these basic factors in the position, as they are too often overlooked. It has become almost a fashion in some quarters to criticize oil and oil companies, and to attribute to them most of the national disadvantages which may have been occasioned by the advance from what may be termed for short the "coal engine." In these opening remarks, however, I have dealt only with the commercial aspect of oil and its uses for peace purposes. But, unfortunately, the matter does not end there, and we have to consider a very thorny problem. The advances in engineering have also resulted in revolutionary changes in our Navy and Army and, above all, have made possible the creation of the air arm.

The Navy and Air Force are wholly dependent upon oil, the Army very largely—if there are any who doubt the necessity for oil in the Army, let them imagine what it would be like to spend an hour or two in the interior of a tank with a coal-fired boiler therein as its source of energy. The Navy may in the future be able to utilize some ships designed to be capable of burning either oil or coal.[1] But, personally, I think any material relief from such development is rather unlikely.

WAR DANGERS.

In the event of our being involved in another European war, we should require a great deal of oil. We should certainly need very large supplies of petrol for the Air Force, especially as it will probably have to operate each machine for twenty-four hours per day as long as we have machines and relays of pilots to carry on.

There are two factors to be considered—how is the oil to be transported here, and how are the storage installations to be protected? In this connection it must be remembered that the speed, carrying capacity, and range of aircraft have been increased enormously in the last few years. It is not too much to say that the late war would have been amazingly different if the belligerents had been provided with modern aircraft. Certainly the British Army could not have gone across the Channel at all unless it had first secured an overwhelming mastery in the air. Machines are now capable of a speed of 250 miles per hour, with a range of 1,000 miles, and a bomb load of 1,000 lb. There are certain

[1] Attention is invited to the remarks in the discussion, especially those of the Chairman on this subject.—EDITOR.

new developments pending which may enable all present performances to be still further improved upon, and the future in the air looks very menacing indeed for those on the ground. Also at sea the position has been greatly changed by the development of torpedo-carrying aircraft of a most formidable character. Let us examine the conditions for a moment in the event of future war, and see what effect these new developments may have upon our peace-time network of oil supplies. If you look at the table of imports given earlier, you will see that, apart from the small quantity from the British Empire, we derive our main supplies from ten countries, five in the West and five in the East, as follows :—

EAST.

	Million Gals.
Dutch Borneo	59
Iran (Persia)	621
Iraq	13
Russia	66
Roumania	196
	955

WEST.

	Million Gals.
U.S.A.	351
Mexico	286
Ecuador	6
Dutch West Indies	893
Peru	98
	1,634

The above-mentioned quantities include both crude and refined products, but it is important to note that Iran (Persia) sent us last year 216½ million gallons of crude and Iraq 13½ million, a total of 230 million, as compared with a total of 232½ million gallons from all the five Western oilfields. In other words, almost half our supplies of crude come from Persia and Iraq. Now what is the position of these Eastern supplies in time of war ?

First take Dutch Borneo and Persia. The obvious route for these oils in peace time is *via* the Red Sea and the Suez Canal, but it would

be more than difficult to send oil by this route in time of war. The ports of departure are known, and the speed of tankers is slow. The Red Sea could be air-patrolled by three or four countries, the Suez Canal could be made impossible by hostile aircraft, and anything that did get through would have to run the gauntlet of the Mediterranean, every yard of which would be within range of attack by quite a number of other countries potentially hostile. Writing in the *Evening Standard* on 11th November, Marshal of the Royal Air Force Sir John Salmond, in discussing the command of the Mediterranean, said : " Great Britain holds the two exits, but Malta, half-way, under air bombardment which it is possible to bring from hostile shore-bases, would be in ruins in forty-eight hours. That small island with its large naval establishments is impossible to defend against the immensely superior air forces which a Mediterranean Power might bring to bear." This is not very encouraging for the prospects of bringing British oil through the Mediterranean. It is, I think, a fair submission that we should be compelled to send supplies from Borneo and Persia round the Cape, in which case the return journey would take about fourteen weeks, and the protection of the Navy would be required for long stretches of the route. The Persian suppliers might also find it difficult to get out of the Gulf, as the Straits of Ormuz are very narrow and could in certain circumstances be patrolled by aircraft. I am assuming that the pipe-line through Persia would remain intact, but it is easy to envisage circumstances which would not be so fortunate. Also, there are other potential dangers which it is perhaps unwise to mention.

Coming to Iraq, the imports for last year totalled only 13½ million gallons of crude oil. The potentiality of this country with its marvellous 1,200 miles of pipe-line to Tripoli and Haifa is, however, very great indeed, and in peace time will provide a most notable contribution to European and North African supplies. Whether the pipe-line and the pumping-stations thereon can be preserved in time of war remains to be seen. In any case, as the two ends of the line discharge into the Mediterranean there is, in my opinion, little chance of any oil therefrom ever reaching England. Also, the ports of shipment are within range of Turkish aircraft, as are the pumping-stations on the pipe-line.

On the Eastern side, therefore, we are left only with Russia and Roumania. Supplies from these countries, assuming that they were willing to send them, would have to pass through the Bosphorus and the Dardanelles before reaching the Mediterranean, and it would be unwise to rely upon anything from these quarters. On the whole of the Eastern side, therefore, apparently the only chance of any large supply is in the Persian pipe-line, with a journey round the Cape which takes about 14 weeks there and back ; a very unhappy prospect.

On the Western side, however, things are not so gloomy. Ecuador and Peru can probably be left out of our calculations, as their supplies are not large and they would have to come through the Panama Canal, which might be closed by political action. This leaves the United States, Mexico, Dutch West Indies, Venezuela, Trinidad, and Tobago, which countries together sent us last year about 1,634 million gallons, or approximately five-eights of our total supplies. Trinidad and Tobago are British, but they are the smallest producers, and sent last year only 105 million gallons out of the Western total. It would appear, therefore, that the fate of the British Empire will probably lie in the hands of the United States, Mexico, Venezuela, and the Dutch West Indies. . The first necessity, therefore, is that these four countries must be friendly towards us in any future war and willing to supply us with almost the whole of our requirements upon terms which we are able to pay.

This question of " willingness " and " terms " may assume considerable prominence. If all the reports are true, the Italian Government have experienced a good deal of difficulty during the last few months in satisfying their oil requirements. It is stated that they have had to consent to charters giving the oil tank skippers the right to land their cargoes at the nearest neutral country if they think fit, and that they have had to give a fifteen years undertaking with regard to a quota into Italy, based upon the maximum rate of supply during the war. It is reported in the Press that the price of petrol in Italy has reached a figure of nearly 6s. per gallon. The question of making oil contraband of war is already being widely discussed. The prohibition of oil supplies to Italy has formed the subject of several debates at Geneva, and it is now being hinted in official circles in the United States that further power should be given to the President in order to enable him to veto the shipment of oil to nations at war if, in his opinion, it should be considered desirable from a world-peace point of view. It is, unfortunately, too clear that nations possessing oil are beginning to be conscious of their powers. Even if willing, they must be able to ship largely increased quantities, and we must be able to get the tankers across. These would have to contend with submarines, and submarines carrying aircraft, and nearer home might also have to run the gauntlet of torpedo-carrying aircraft. In all probability they would have to discharge at ports on our West coast, as it would be too dangerous to send them round to the East. Hostile submarines could operate to some extent on the other side. Even in the last war, allied shipping was sunk outside New York by a German submarine.

The long-range submarine, carrying aircraft, might constitute a most formidable problem. We have to think of these factors also in the light of what such craft might be five or ten years hence, not as they

were seventeen years ago. Last month an enquiry was sent to Lloyd's for a rate to cover cargoes of oil to the United Kingdom, the policy to come into force on the outbreak of any European war in which we would be involved. The matter went up before the Rates Committee, but no quotation could be obtained. The written reply from Lloyd's concludes with this sentence: " We do not think that this is a proposition that any underwriter will entertain." I am not forgetting the British Navy and what magnificent feats they performed in the late war. In the next war they will doubtless be even better prepared to deal with these difficulties. But to protect these thousands of miles of oil routes, the United Kingdom and the British possessions, and at the same time safeguard our food supplies, is bound to be a colossal undertaking. It is sometimes said that if the Navy cannot protect our oil supplies then it cannot ensure food getting through. This is, I submit, one of those somewhat plausible generalities which cannot bear very close investigation. The power available might conceivably be sufficient to protect our food supplies, but not all the oil. Certain it is that every oil route which needs watching reduces the naval strength available for other purposes. Further, the transport of oil is much more difficult than that of food. Oil tankers are a special type of vessel, and can be likened to a thin paper bag of oil floating slowly across the ocean. To sink an empty tanker on the way out is just as efficacious as getting the loaded tanker on the way home. Also, their ports of departure and arrival are very few and well-known, thus rendering them all the more liable to attack. Food can, however, be brought in all sorts of ships and from many ports, in addition to which we certainly have some supplies of our own. The argument that if the Navy cannot protect oil it cannot protect food and that therefore nothing matters, is, I think, fallacious. It is like saying " If the Navy cannot carry out task ' $a + b$,' it cannot do ' b ' alone " ; which seems absurd.

In this connection it is interesting to see what Admiral of the Fleet Earl Beatty has to say as to the present strength of the Navy. In an article from his pen published in the *Evening Standard* on 8th November, he said: " A comparison with our situation in 1914 shows that our capital ships now number 15 as against 69 at that time, our cruisers 57 as against 108, our small craft flotilla 161 as against 216 ships, and our submarines 51 as against 74. Our total tonnage of all types stood in 1914 at over 2,000,000 tons ; now it is a little over half that figure ; while personnel and reserves have shrunk from 300,000 to 150,000. The state of our coast defences also at Malta and Gibraltar is not such as to give real security against modern scales of attack ; while till the Far Eastern base at Singapore is complete we have no means of effectively defending our widespread interests in that quarter of the globe.

Our cruisers are lamentably insufficient for the many calls upon them, for in war time they would have to act as the eyes of the battle fleet, to safeguard our manifold trade interests all over the world, to do convoy duty, and to hunt down enemy raiders. On them, too, will fall continuous and onerous duties in the event of any armed action in the cause of collective security. Here, again, our cruiser construction is at present limited by naval treaties. But we badly need more of them. At least half as many again as we now have would be hardly adequate for all our needs; and a full half of the existing vessels (certainly all those that have not a speed of 30 knots, or are more than fifteen years old) are due for replacement."

HOME STORAGE.

The whole position is, I submit, fraught with grave danger. What is the remedy, if any? The first step is obviously to replan and extend the storage facilities in this country. An examination of the disposition of our present storage installations reveals the fact that the following depots are situated at places less than one hour's flight from the Belgian coast:—

Thames Haven.	Shell Haven.	Coryton.
Isle of Grain.	Sheerness.	Gosport.
Southampton.	Hull.	Immingham.
Killingholme.	Boston.	

It is probably fair to say that, if the British Air Force was located on the Continent and had to attack these depots, they would all disappear within a week or two of the opening of hostilities, no matter how strongly they might be defended by aerial forces.

As for land defence, it is interesting to see what Field-Marshal Viscount Allenby has to say about it. In an article which he contributed to the *Evening Standard* on 9th November, he described the condition of our defences in the following terms: "The bulk of our coast defence artillery is not up-to-date. Our anti-aircraft defences at home are as yet inadequate, and an immense amount remains to be done before they could be said to be reasonably efficient."

In considering these problems we must accept what I think should now be regarded as an axiom, viz., that it is impossible to provide complete protection from aerial attack. The Services will naturally do their best, and their existence will have a wholesome effect upon attempted daylight attacks. The greatest weapon, however, in the armoury of the Royal Air Force in the next war will be its enormous power of attack and its ability to carry out reprisals of the most terrible nature. The refineries and storage depots on the West Coast of England,

although within range of aircraft operating from the Belgian Coast, are more likely to be immune on account of the extra distance, but even with these the position must be fraught with anxiety. The best procedure, probably, would be to lay down a number of underground storage depots inland in open agricultural country away from waterways, railways, and other possible aerial landmarks. Grass and trees would grow above them in the usual manner, so that the closest inspection from the air would reveal nothing. These underground depots would be connected with the coast by pipe-line, and it might also be desirable to connect the whole of the system by pipe-line. The scheme might cost as much as twenty millions, but its existence might conceivably save the country. According to official statements the Government proposes to spend a hundred millions on improving the roads during the next five years. I do earnestly suggest that a national oil-storage scheme should come first.

Naturally, the capacity of these underground depots should be large—not less than, say, five million tons. In volume of various oils of different gravities this would be approximately 1,250 million gallons, or about five months' supply at last year's rate of importation. It would, of course, be better to increase this amount, and in view of our requirements for the Navy and Mercantile Marine, a minimum of eight million tons would be preferable. Having regard to the fact that the combined Army, Navy, and Air Force votes amounted this year to £131 million and will, in future, be largely increased, it does not sound unreasonable to ask for an initial expenditure of £15 to £25 million to enable them to be certain of functioning.

COAL OIL.

In addition to the establishment of a national storage scheme, it would be of immense advantage if more oil were produced in this country ; and quite a considerable amount could be produced from coal. The advantages would be :—

(1) Less work for the Navy in convoying oil in war.
(2) Considerable prolongation of the life of our war reserve stocks.
(3) Complete independence of the Royal Air Force in respect to supplies of motor spirit.
(4) More work and increased revenue for the mining industry.
(5) Less expenditure on imported oil.

Oil from coal has already been produced in this country for many years past by the process of high temperature carbonization, and in the last war large quantities of coal spirit in the form of benzole were

used for blending with petroleum spirit for use in the air forces of this country. In 1928 further supplies of coal oil became available as the result of the starting up of the first " Coalite " plant, and the output has since been greatly increased as the result of putting the second and third plants into commission. The third plant is operated under licence by the South Metropolitan Gas Company at Greenwich.

At each of these three works a small petrol recovery plant has been installed, and the Royal Air Force has been using the whole of the petrol thus manufactured for the last two years. This summer about twenty squadrons have been regularly using coal petrol. During this period of what has been little more than full-scale experimental work, there has been produced and sold about 175,000 tons of oil and petrol all made from coal by the " Coalite " process. The products include :—

(1) Petrol to R.A.F. specification.
(2) Fuel oil to Admiralty and other standard specifications.
(3) Diesel oil (now nearly ready).
(4) Oil suitable for conversion by hydrogenation either into motor spirit or into Diesel oil.

In addition to the use of the petrol by the R.A.F., the Admiralty has had a few thousand tons of the fuel oil, and in 1932 H.M.S. " Westminster " went to sea fuelled only with coal oil. The results of the sea trials were quite satisfactory, and were reported upon very fully by Engineer-Captain S. H. Dunlop, R.N., in a paper read in 1933 before the Institution of Engineering and Shipbuilding in Scotland. In addition, many thousands of tons of the same fuel oil have been used by British railway companies and other large industrial undertakings. It is now certain, as a result of many months development work, that oil suitable for Diesel and all types of compression-ignition engines can be made from coal by the L.T.C. process. A long series of engine tests have already been carried out quite successfully, and road tests are now about to commence.

The establishment by Imperial Chemical Industries Ltd. of the hydrogenation plant at Billingham provides a most valuable addition to the country's coal-oil resources. Not only does it afford the means of converting solid coal into oil, but by its aid the whole of the country's yield of creosote and low-temperature oil can be converted into approximately an equal volume either of motor spirit or Diesel oil. The first train load of L.T.C. oil was despatched to the Imperial Chemical Industries in April this year, and a contract for several million gallons is now in course of execution.

It is a fact that the production of benzole and petrol from British coal, plus the petrol made by the hydrogenation of existing crude coal

oils, is even to-day more than enough to keep the Royal Air Force in the air. Large additional quantities would be required in war, both for the Army and for home road transport, and it would seem to be of paramount importance to increase our home supplies.

There is one feature in this situation which should be emphasized, and that is the complete success which has attended the manufacture of oil and petrol from coal by the process of Low Temperature Carbonisation Ltd., and the hydrogenation of crude coal by Imperial Chemical Industries Ltd. By the L.T.C. process petrol and fuel oil have been produced on a commercial scale for years, and at a profit. The qualities are absolutely uniform year after year, and comply with the most rigorous Service specifications. A similar success is being experienced with Diesel oil made from coal, so that the three main Service requirements for fuel can be supplied in part from coal oils. And, in addition, by the hydrogenation of existing crude coal oils the total production of petrol could be raised to a much larger figure, although even then it would represent but a small proportion of our supplies.

It is important to remember, however, that we have not so far been successful in making lubricating oil from coal on a commercial basis, and we may find this problem too difficult for us.

The questions therefore arise—can these quantities be increased, and if so to what extent, and by what means ? First of all, I should like to make it clear that there is little likelihood of our ever being able to make in this country any really substantial proportion of our total requirements of petrol and oils. We read every day in the newspapers the fantastic claims of share-pushers as to the amazing yields of oil they are about to obtain from a ton of coal : but they never can and never will carry out the claims they make. In this connection, I would like to take an opportunity of saying how greatly the carbonizing industries welcome the action of the Treasury in warning the Stock Exchange as to the dangers of sponsoring such schemes without first taking the advice of really independent scientists whom the Treasury are prepared to recommend.

The only carbonization or distillation method which has proved to be successful on a large commercial scale is the L.T.C. process for the manufacture of smokeless fuel. By this means the petrol and oil are derived as by-products which can be produced and sold at an economic price, by reason of the fact that the smokeless fuel side of the business shoulders most of the cost. It is true that petrol and oils derived from coal are exempt from duty, and I think very properly so. The cost of developing the L.T.C. process has been considerable, and we still have a long way to go before we can expand the output

sufficiently to enable us to make a really material contribution to national security. When that day arrives—and I see nothing to prevent it—the amount of preference the native product will have enjoyed will, in terms of money, constitute but a microscopic premium to have paid for the security of our country and the Empire. Also, in all probability, the amount of preference will have been largely counterbalanced by increased employment due to the creation of this new industry.

How, then, can this new development best be followed up? The Mines Department has recently invited applications for licences from those desirous of drilling for oil in this country, and a number of licences are being granted. Yet nobody ever mentions that very considerable oilfield we have in the Midlands called the Barnsley Bed. This great deposit of rich bituminous coal, which stretches roughly from Nottingham to Leeds and across from Yorkshire probably to the sea, constitutes our most valuable coal-oil deposit—valuable not only for the enormous amount of potential oil it contains, but also by reason of the fact that the coal, when treated in a certain manner, yields a fuel of outstanding quality and high calorific value, thus enabling the whole process to be worked in an economic manner. The geographical position of the field is excellent. It is well served by railways, canals and ports, and the labour is most suitable for the class of work involved. Furthermore, the cost of transport of the smokeless fuel to the most thickly populated areas is not uneconomic, especially having regard to the high heating value of this form of fuel. It is, I think, most unfortunate to see so much of the best portion of this oil-coal seam being burned for ordinary steam-raising purposes. It is almost as bad as chopping up the lid of the grand piano for firewood. There is plenty of ordinary steam coal available and it is a serious waste of material to burn oil and petrol under boilers, or in open fireplaces where combustion is so incomplete that much of the volatile matter in the coal is discharged unburned into the atmosphere.

It is computed that about 40 million tons of raw coal are consumed each year for domestic purposes. All this could be replaced with smokeless fuel, to the great benefit of the individual consumer, the national health, and the community generally. To make the necessary quantity of smokeless fuel it would probably be necessary to carbonize about 50 million tons of coal. This would yield :—

Smokeless fuel . . .	35 million tons.
Crude coal oil . . .	900 million gallons.
Coal petrol	150 million gallons.
Rich gas	1,500 million therms.

The whole of the 900 million gallons of crude coal oil could be converted into petrol and/or Diesel oil by hydrogenation. Alternatively this oil could be distilled, yielding fuel oil, Diesel oil, tar-acids, pitch and residues suitable for hydrogenation. One of the remarkable features of this coal oil is its flexibility: it can be hydrogenated—in fact, it is by far the most suitable coal oil for hydrogenation; it can be cracked; or it can be distilled and fractionated into quite a number of valuable and much-wanted products. From the technical point of view, therefore, no difficulty stands in the way of a much greater utilization of our own coal resources.

The process is economic, and a satisfactory rate of interest would be earned on the capital cost. The money required for the carbonization plants would work out at a little less than £1 for each ton of coal put through per annum. For example, a plant capable of treating 1,000 tons of coal per day would cost, complete with everything, not more than about £300,000. I would like to see three or four of the largest collieries on the seam breaking down all the coal they produce, and carbonizing it by the L.T.C. process. Even after allowing for the cost of breaking, the price realized would be well above the average figure obtained now, which is about 13s. per ton. To complete the scheme an I.C.I. hydrogenation plant should be set up as close as possible to the coal plants, with a view to the hydrogenation of such portion of the crude oil produced as was required to be converted into petrol and/or Diesel oil.

There is nothing of an experimental character in the whole business. The present L.T.C. works at Barugh and Askern have operated night and day without a stop since they were started up in 1927 and 1929, and they are both in first-class condition and capable of functioning efficiently for many years to come.

SUMMARY.

The whole case, therefore, can be summed up under the following heads:—

(1) That the trend of engineering development has resulted in an ever-increasing demand for oil as a source of power, and that this movement is likely to continue and the demand for coal to show a still further reduction.

(2) That the arrangements made for the supply and distribution of oil in this country are highly efficient and have enabled us to take the fullest possible advantage of all those major improvements in engineering practice which have involved a change over from coal to oil.

(3) That the arrangements for conveying oil to this country from the various oilfields of the world are naturally worked out on the basis of peace-time conditions. Should an European war occur in which this country were involved, supplies would in all probability be gravely endangered.

(4) That supplies from the Eastern oilfields might cease altogether or be reduced to whatever could survive a seven weeks' journey round the Cape. From the West we should have to rely upon four foreign countries for practically the whole of our supplies, and these would be exposed to considerable danger before they could reach British ports.

(5) That in order to strengthen our position, the storage for oil in this country should be considerably increased and moved inland to underground tanks or reservoirs. Much of this new storage should be interconnected with pipe-lines.

(6) That the present coal-oil industry in this country should be developed as rapidly as possible in conjunction with hydrogenation, and more effort should be made to develop our seams of high volatile bituminous coals for this purpose.

It is worthy of note that Germany is rapidly building up a very large organization for the manufacture of petrol and oil from German coal and lignite. Largely as a result of direct government action, a number of plants are being built and existing plants are being enlarged. It would appear that by the end of 1936 the total production of petrol by the Bergius process, the Fischer-Tropsch process, and direct low temperature distillation, will amount to approximately 1,000,000 tons. In addition to the foregoing, the coke oven plants produced in 1934 220,000 tons of benzole, and the yield of petroleum from the German oil wells in operation was, during the first half of this year, about 218,000 tons.

It is perhaps not without significance that the time chosen for the rapid development of this considerable organization for the production of oil from German material should happen to coincide with the expansion of the German fighting forces which is now taking place.

DISCUSSION.

MR. PHILIP FARRER: With regard to the hydrogenation process, I gathered that the Lecturer said that at the Billingham Works they were hydrogenating oil from coal. But is that so? I understand that the oil is supplied to the Billingham Works, and that the oil is hydrogenated.

COMMANDERE J. P. CHARLEY, R.N.: Can the Lecturer give some idea of the amount of coal which is required in the process of making one ton of oil at the Billingham Works?

ADMIRAL SIR WILMOT NICHOLSON: The Lecturer has tried hard to frighten us about our dependency on oil. As we are very dependent on oil at the moment, why should not we try to use coal as much as we possibly can in order to relieve the pressure on oil—our coal admittedly being the best fuel.

MR. T. C. OWTRAM (Anglo-Saxon Petroleum Company).—As one who is connected with the oil industry, I should like to endorse what the Lecturer has said about the importance of storage. The production of oil at home is, of course, desirable also, provided the sacrifices, financial and otherwise, are not excessive in proportion to what is achieved. I feel, however, that the Lecturer did rather try to make our flesh creep in describing the difficulties and dangers of transporting oil across the sea. In fact, the metaphor which he used when he compared an oil tanker vessel to a paper bag floating on the water seemed almost ludicrous. An oil tanker vessel is an assemblage of rigid steel tanks, with a space for machinery somewhere aft. If this machinery space is not penetrated, it is difficult to sink a tanker. It happened in the late war that a tanker containing motor spirit had one of its oil tanks damaged in a collision, which allowed the oil to escape and sea water to come in. Four days later the ship arrived in port and discharged her cargo, and it was only then that the extent of the damage was realized.

ADMIRAL SIR SYDNEY FREMANTLE: The Lecturer has painted a very lurid picture of the position, but I think he has omitted one or two rather important considerations. In the first place, he spoke rather as if all the oil supplies that would be required in war would be required in this country. As far as the Navy is concerned, they will be required all over the world. I take it the same applies to the Air Force, and also to a considerable extent to the Army. Surely the ubiquity of the sources of supplies of oil very largely modifies the suggested insecurity of the supply of oil.

I understand that this is not a discussion on the relative merits of coal and oil, but as regards the ubiquity of supplies of coal available for steaming purposes, and that of oil, oil has it every time.

The Lecturer suggested that the oil supply might be cut off in the Mediterranean. I think there is very little doubt about that, and that we must all admit the immense opportunities for air action if we were at war with Mediterranean Powers. Such oil as comes from the East would have to come round the Cape; but surely it could hardly be conceived that we should be at war with the whole world at the same time. I take it that if we were at war with Mediterranean Powers, the probability is that everything would be calm in the Atlantic, except of course for the ubiquitous submarine. We should be able to get our supplies from the West all right. One might say that the converse is the case—that if we were at war with an Atlantic Power, supplies would come through the Mediterranean: it is more than probable that the Mediterranean Powers would either be our allies or be neutral.

There is one other point. I do not know whether I carry other naval officers present with me, but I should like to join issue very definitely with the Lecturer when he stigmatizes as being somewhat ridiculous the argument which is so frequently heard—that if our control of the sea fails it is not for the oil that we are going to fail nearly so much as for food and for such vitally important raw materials as cotton, various metals, rubber, and other essential commodities. It seems to me—and I think it will be the view of most naval officers—that whether it is mine-sweeping, or operations for finding and sinking raiding cruisers, or whether it is convoy against submarines, precisely the same system of defence applies—whether we are protecting oil supplies, or food supplies, or supplies of cotton, or even whether we

are protecting the transport and supplies for our Army if it happens to be engaged on the Continent. I think that the Lecturer's arguments in this respect are somewhat artificial when they are used to stress the unreliability of our supply of oil.

LIEUTENANT-COMMANDER COLIN BUIST, R.N.: The Lecturer has pointed out that there is no natural petroleum oil in the British Isles, or at any rate it has not yet been discovered. Perhaps it would help us better to appreciate this problem if he could inform us what is the percentage of the world's production of natural petroleum oil which is to be found within the British Empire.

LIEUTENANT A. J. F. MILNE-HOME, R.N.: May I ask what the extraction of petrol from shale oil in Scotland amounts to?

WELSH COAL AND OIL

CAPTAIN E. ALTHAM, R.N.: I would like to supplement what Admiral Fremantle has just said about the importance of the sources of the Services' fuel supplies being world-wide. I have never understood the arguments of those who want the Navy to go back to coal because, as they urge, we can thereby ensure our sources of fuel supply. I suggest that they have not analysed the basis of their conviction, for this very good reason: I believe I am right in saying that almost the only source of coal supply which could be used satisfactorily for the Navy is in Wales, and it cannot be said that Welsh coal is a world-wide source of supply. Moreover, they have intimated that those arch villains, the heads of the oil syndicates, are a source of danger, in that they might turn off the tap at a critical moment. We have only to go back a few years to recall the name of one Mr. Cook, who, I suggest, was far more eligible for the label of Public Enemy No. 1 in that respect. Mr. Cook had no personal interest (except so indirectly that I do not think he considered it) in selling coal; but it is the one aim in life of these alleged oil-fiends to sell oil; are they likely to cut off their noses to spite their own faces?

But that does not in any way detract from the case which our Lecturer has been making to-day for coal as a source of oil supply; and it seems to me that he might even have added weight to his arguments by pointing out the further advantage that the process of extracting oil from coal is not confined to any one coalfield. I believe it is a fact that quite good oil or petrol can be extracted from what is, certainly from the point of view of naval fuel, very bad coal. I believe I am also right in saying that the super-coal on which the Navy used to rely—Welsh coal, is a very indifferent oil-coal.

There is a further advantage in being able to get some of the fuel which we require for the Services out of native coal, namely, that as a source of supply it is well protected from air attack. Of course the plants on which we have to rely to extract the oil are very vulnerable, but presumably they could be repaired without undue delay, and also it should be possible to have a good many of them.

There is one other point—one on which, perhaps, our Chairman may be willing to throw a little light; that is the question of carrying both coal and oil as fuel in the Navy; in other words, having what is known as dual firing. It has been stated frequently that certain quite modern foreign navies have returned to, or are retaining, dual firing. It would be of great interest if we could have any information as to the extent to which important foreign navies are still relying on dual firing.

THE CHAIRMAN: I have one question to ask the Lecturer: he referred to the Mines Department having granted licences to people in this country for boring for oil; can he state whether there is any new development or source of oil suspected anywhere in the British Isles which is encouraging?

MR. E. P. N. HYDE : I understand that in Kent and Sussex efforts are in preparation for finding that out. They have gone down to nearly 2,000 feet, and I have reason to believe that oil has been struck at six points.

ENGINEER-COMMANDER G. G. P. BURT : The Lecturer made a statement that a certain amount of Diesel oil was being supplied ; can he tell us whether it is suitable for use in high-speed internal combustion engines ?

THE LECTURER

I am indeed happy to be let off so lightly !

One or two of the speakers alleged that I attempted to make your flesh creep. That is the one thing I tried to avoid. I quoted from three articles which have appeared during the past week by Earl Beatty, Sir John Salmond, and Lord Allenby, dealing with the defences of this country and the Mediterranean so far as they were relevant to this paper. I told you nothing whatever outside that, although there is a great deal of evidence available in the Services as to other difficulties which we are likely to encounter. If I did make your flesh creep, then the credit or debit is due to the three eminent officers whom I quoted. But I think, if you will look at the map of the world and see what the Mediterranean means to-day, the strategical positions of the Suez Canal and the Persian Gulf, and the distances over which we have to take oil—and having regard to the greatly increased range and speed of aircraft—you will see for yourselves that the conditions are very serious indeed.

Sir Sydney Fremantle agreed with me that the transport of oil through the Mediterranean was going to be an extremely difficult matter. But he was at cross-purposes with me through a misapprehension. I do not overlook for one moment the advantage oil has in the middle of the world, and in the East, where we have to pick up fuel for the Navy. There, oil is a very great advantage. I did not suggest for one moment that any relief for the coal industry is likely to be found by putting coal back again into the service of the Navy.

Personally, I think that we shall have to continue to rely upon oil, and I agree that it has great advantages because it can be made available for the fleet anywhere. The point we differ on is the question of the control of the sea. There is not going to be any control of the sea, as I see it, for anybody. The sea is a very large place ; there are other naval nations with considerable naval strength, and I think it is too much to expect that we are going to have control of the sea in all parts of the globe. Nominally we had control of the sea in the late war ; but for quite a long period we had two food ships sunk every day ; our shipping all over the world was destroyed ; and the East Coast was shelled by enemy warships : that is what control of the sea meant for us. We may have control of the sea in the same nominal sense in the next war.

It is not a question of whether the system required for protecting food, oil, cotton, trade-routes and so on, is the same or different. It is a question of the extent of the system. We know what we suffered in the late war by reason of the fact that the Navy had a great deal to do and was incapable of doing it all. We put up with enormous inconvenience and loss and were very nearly beaten, because we did not have command of the sea. I still think that, even with the depleted Navy which was outlined by Lord Beatty in his article last week, we can achieve a certain amount ; but if we are going to add to our burden by protecting thousands of miles of oil routes all over the world, we are obviously making it very much more

difficult for ourselves. That is one of the reasons—probably the chief reason—why I put forward in the forefront of my paper that the first thing we must have (because we are so dependent upon oil) is a totally different system of oil storage in this country, and one of much greater capacity.

Home Oil Requirements.

Sir Sydney Fremantle very rightly said that we do not want oil only here; we want it abroad. But do not forget that we want a great deal here. After all, the Home Fleet and the Mercantile Marine will have to be fuelled here. You remember the figure I gave you: 45 per cent. of the Mercantile Marine is to-day running on oil. The road transport of goods in this country is responsible for the consumption of hundreds of millions of gallons of fuel every year. It is all very well to say "Put the goods back on the railways," but the traffic now is too great for them. If the industrial system of this country is to be galvanized into three-fold life in the event of another war, our road transport will probably expand immediately to even greater dimensions than we see to-day.

I hope devoutly with Sir Sydney that we are not going to find ourselves in difficulties on both sides of the world at once, but I have given up trying to be a prophet as to what is likely to happen in this world. If anybody had told me two years ago that we were going to be on the verge of war with Italy, that Egypt was going to be gravely menaced, and that we were going to send home our women and children from Malta, I would not have believed it. But there it is. It is a topsy-turvy world, and the moment you see reasonable democratic governments turned out and Dictators taking their place, then you may have to be prepared for a combination of circumstances of a very unexpected character. So that, although I naturally listened to Sir Sydney with the greatest possible attention, I failed to find in anything he said one word which in any way controverted my arguments.

Mr. Ferrar spoke of the hydrogenation of oil at Billingham, and asked what they were doing there. They are working the Bergius process. Bergius invented his process, I believe, at the instigation of the German Government, in order to provide them with petrol made from solid coal, brown coal, or lignite. In putting up their plant at Billingham the I.C.I. had two things in mind: (*a*) to hydrogenate solid coal; (*b*) to hydrogenate coal oils already produced in this country. They have a plant for grinding the raw coal and mixing it with oil, and hydrogenating the mixture. They have done it experimentally. They are not yet doing it on a very large commercial scale. They are buying coal oil from other works and hydrogenating it. They have made this year, I think, somewhere about 50,000 tons of petrol from coal and coal oils.

One gentleman asked me how much coal was required for making a ton of petrol. I think at Billingham they make about 55 gallons to the ton, but in any new works they would probably reach an output of 75 gallons per ton of coal.

Admiral Nicholson asked why we should not try to use as much coal as we can. If I may say so with great respect, that question is rather outside the ambit of our discussion to-day. This is not a discussion on dual firing. The oil being where it is, what are we going to do about getting it here?

The gentleman representing the oil industry said that I was guilty of gross exaggeration in likening an oil tanker to a paper bag floating slowly across the sea, and he mentioned the case of a ship which was torpedoed and not blown up, although he admitted that all the oil was lost. Other ships have been torpedoed without

being blown up. But I repeat that an oil tanker is, from the naval point of view, no more than a paper bag of oil floating slowly across the sea. It can be put down in five minutes by any of the fast modern motor-boats equipped with torpedoes. The tankers are not armoured; they are not armed. The smaller bombs or torpedoes can send them to the bottom nine times out of ten, and their speed of 12, 13 or 14 knots maximum compares most unfavourably with the 35 and 40 knots of the boats which are likely to attack them, quite apart from aircraft.

The same gentleman said that he agreed with the manufacture of coal oil in this country provided the cost was not excessive. The cost is not excessive. The oils are sold at the same price as the imported article. The R.A.F. pay the same for their petrol, and fuel oil is sold in the country on competitive terms with all the other oils.

Lieutenant-Commander Buist asked what was the amount of oil provided by the British Empire relative to the total amount. We provide 122,000,000 gallons out of 2,752,000,000 gallons—or less than 5 per cent. So that to-day, although we are very largely dependent upon oil—in fact wholly dependent—we ourselves produce only 5 per cent. of the world's oil.

Another question asked was how much petrol was made from shale in Scotland. I do not know the present figure for petrol alone; but in 1934, just over 30,000,000 gallons of liquid products were distilled from Scottish shale.

Captain Altham very properly corrected me. I did not make it sufficiently clear in my paper that other bituminous coalfields are equally suitable for making coal oil. We have the coal of Durham and Northumberland, the Manchester coalfield, the Forest of Dean, the Monmouth Valley, and a certain amount down in Kent. All these districts produce bituminous coal possessing a volatile content of between 26 and 38 per cent. It is a fact, however, that the people who are most insistent upon the use of coal in the Navy, and who are dead against the use of oil in the Navy—whether it is coal oil or not, are producing, unfortunately for themselves, coal which does not produce oil—i.e., hard steam coal with a very low volatile content.

I do not know what may be the extent of dual firing throughout the world; but to design a ship with the same radius of action and gun-power, using coal and oil instead of oil alone, would be impossible. The Admiralty use oil because they are absolutely compelled to do so if the British Navy is to be made efficient.

With regard to the question by the Chairman as to what is happening with regard to licences for boring for oil in this country, there have been up to the present about sixty or seventy applications, and some will be granted during the next few days. Oil does occur in this country in quite a number of places, and it has been drawn off from collieries in the Midlands for years past. There is one colliery near Derbyshire where they obtain each week about 250 barrels of oil. Whether we shall ever find it on a large scale, or at what depth, we do not know. Neither do we know how oil is distributed throughout the world—whether in a continuous stream which runs all over the world at different depths, or in isolated pools here and there. But we do know that the climate and conditions in this country and in Germany are about the same; the terrain looks similar. They have a number of wells in Germany in constant operation, and in the first six months of this year they produced 122,000 tons.

The last question was from Engineer-Commander Burt, who asked whether

the Diesel oil would be suitable for high-speed Diesel engines. It is suitable for all types of Diesel engines for which normal petroleum Diesel oil is suitable.

I apologize for making your flesh creep, but in my opinion the question we have been discussing to-day is undoubtedly one of the most vital with which this country will have to deal during the next twelve months.

THE CHAIRMAN:

I have been asked to say something about dual firing. The Admiralty, as you know, has every sympathy with the coal trade; but this is not a matter for debate but one of fact. Under modern conditions raw coal cannot be utilized in fighting vessels for reasons which are obvious and which have been stated in the House of Commons frequently. As regards foreign ships, I will quote an answer given in the House of Commons:—

> "Two countries only have fitted the dual firing system in recent years—France in three vessels of the "Suffren" class completed in 1931, and Japan in four cruisers completed in 1926 and 1927. The amount of coal consumed in these ships is not known, but coal can only be burnt in a small proportion of the boilers, and is rarely used. Dual firing is not being fitted in new construction by any foreign Power, and dual fired vessels are generally being converted on reconstruction to burn oil only."

To sum up, I agree with Sir Sydney Fremantle in that the Lecturer's remarks perhaps appeared to refer to a European war only. We must not lose sight of the fact that in the event of war in a more distant part of the world it might be just as difficult to transfer fuel from this country to the scene of action as it is in the case envisaged to us.

I do think that the case the Lecturer put before us for the importance of storing oil in this country and the advantages of home production, if it can be done in quantities and at the price we want, is one which does not admit of argument. His statement that the benzol and petrol produced by these several processes in this country are sufficient to keep the Royal Air Force in the air is most satisfactory.

The Admiralty will, as they always have in the past, give every encouragement to any organization which can supply home-produced fuel on a reasonable basis as regards price and quantity. I think we may say that, although at the present moment the output is not what we want in quantity, the outlook is distinctly encouraging. I know you will join with me in thanking Colonel Bristow most sincerely for his most interesting lecture.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

AUSTRALIA'S DEFENCES

By Admiral Sir Herbert W. Richmond, K.C.B.

IN his small book, *Japan and the Defence of Australia*,[1] "Albatross," following in the wake of Major-General Laverack and Colonel Wynter, advocates the adoption of new principles in Australian defence. The reasoning is probably familiar and no one will deny that the matter needs the most earnest and profound study. The reductions in the British fleet, and the signs that Britain is reaching the limit of her individual financial strength in face of the intense competition at sea, are formidable threats to Imperial security. It is not surprising, in the light of the world situation and the experience of the application, both during the War and afterwards, of the principle that one nation's difficulty is another nation's opportunity, that outlying Dominions should be apprehensive of their security if a war should limit the Navy's operations to European waters.

Australia's needs are set out by "Albatross" in a sentence: "In case we were threatened we ought to have the most effective sort of armaments to enable us to repel invasion or raids or threats to trade" (p. 20). And again: "Our plans should be made in the expectation, not that the British navy will be available after local means of defence have served us for a few months, but that we shall have to rely solely and finally on our own resources and preparations" (p. 31). The conclusion to which he comes is that it is possible for Australia to defend herself, with her own resources, against the most powerfully armed nation, for a prolonged period: but his proposals do not fulfil one part of the expressed needs—security against "threats to trade." These proposals are that instead of devoting any expenditure to naval defence by ocean-going vessels, the whole available money shall be used to increase land and air forces and to provide, in a manner unspecified, destroyers and submarines. In other words, that Australia, treating herself as a fortress, shall confine her contribution to Imperial defence to local defences. The policy is almost identical with that which England adopted and which led to the Dutch compelling her to accept a humiliating peace in 1667.

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[1] *Japan and the Defence of Australia.* By "Albatross." (Bourne and Mullens, Ltd., Melbourne. 2/6).

" Albatross " recognizes that there are two ways by which a country may be compelled to comply with the demands of an opponent—invasion and investment; he introduces raids, but they are never decisive factors, important though they may be as diversions in favour of one or other of the major operations. His opinion is that, given the forces outlined above, invasion would be impossible, " blockade " ineffective, and the coastal communications kept in use. Even, however, if the export and import trade were, contrary to his belief, to be stopped, the people of Australia could still hold out and would not be forced to surrender any rights, doctrines of national policy, or territory.

As to the stoppage of external trade, he takes the line that it cannot be done, but even if it were, if would not matter. He gives his opinion that stoppage is not possible; but the only reasoning with which he supports his dictum is that those who have expressed a belief in the possibility have not thought of the submarines. Here I am afraid he is in error, at least in the case of one person, who fully envisaged whether the submarine would hold the way open for shipping and concluded that it would not. He quotes the opinion of a writer in the *Round Table* in an article which he describes as authoritative (though why " authoritative " is not very clear) which dealt with the opportunities of blockade in European waters. There is a profound difference between blockade in European seas, where the trade routes lead to many neutral countries, and blockade in waters where the routes lead only to those of an enemy, as any reference to the international law of blockade will show. Flotilla craft can play a far more effective part in the confined areas necessitated by the situation in European seas than in the open spaces of the waters surrounding Australia. He takes, moreover, no count of one very common phenomenon in war—the reluctance of trade to sail where there is lack of confidence. If it were known that enemy cruisere were operating in the approaches—not by any means necessarily the close approaches—to the continent, there would be great reluctance to sail. That blockade runners would get through is undoubted; that they would get through in numbers sufficient to relieve the pressure on the people is problematical.

However, " Albatross " does not depend on this argument. He is prepared to face the possibility that " the great part of our overseas trade could be stopped if we were at war." What would be the consequences, he asks.

Here, plainly, we are outside the sphere of strategy and are entering two other spheres—trade or economics, and national will. What would the " economic " results be in the form of shortage of goods, finance,

upheaval of industry, unemployment; and what the effects of shortage, rise of prices, unemployment, upon the will-power of the people and their determination to continue to resist the demands of the enemy?

Australia could feed herself—of that there is no doubt. She possesses iron, steel, lead, zinc, copper, sufficient for her needs. She has factories which can turn the raw materials into the finished product. She has coal to provide the power at the factories. Her important shortages are petroleum products and phosphates. "Albatross" attaches no great importance to the lack of these. Oils can be stored in peace time; diminished cereal production will call for less phosphates.

Neither a soldier nor a sailor is, by his profession, capable of expressing an opinion of any weight as to what the two kinds of effect of stoppage of external trade would be, but it needs no great acquaintance with public affairs to realize that Australian national life is based upon the sale of her surplus of primary products—meat, wool, cereals, etc.—which are exported. If export ceases, production must slacken down, and with that unemployment must occur in those industries, and in the waterside labour which lives by the handling of external trade—I omit reference to the "coasting trade" for the moment. The unemployed would have to absorbed into industry, the fighting Services, or munition producing. Money to pay these new recruits would be needed and would have to be lent by the banks. Inflation would be liable to occur. What effect would this have upon the standard of living? That is for the economist to answer; possibly the reply is that the price of semi-luxuries would rise and of staple foods fall, and compensation would be asked for by the farmers. Yet with all that, no one will say that life must necessarily become insupportable to a determined people, even if this state of affairs were continued for a prolonged period. Distress, discontent, and disturbance would be likely to occur, but before either "Albatross" or his critics can establish their views, the extent of that distress must be calculated by the economist.

External trade is not the only form of sea-intercourse on which Australia depends for her prosperity. The coasting trade may prove on examination to be even of higher importance. It is an essential part of the distributive system of the continent. This "Albatross" of course recognizes. His remedy is to improve the land communications and, until that is completed, to protect the coastal trade from Newcastle to Spencer's Gulf by mine-fields, submarines, destroyers, and air craft. Whether service on the land lines could be augmented to the extent needed to carry what now proceeds coastwise is a matter for traffic experts to determine. At the same time as a vast tonnage of goods is being cast upon the rolling stock, the Army and Air force, scattered

as they are bound to be to meet an invasion at any possible point, would be calling for rolling stock as well: it is within the recollection of many of us how railway needs affected Russia in the autumn of 1914, and other countries at later periods. Coal is a bulky cargo; if it has to be distributed to railways, to armies and to factories in all parts of that great territory by rail instead of by sea, it is hardly possible to doubt that a most difficult problem will arise. What effect will that have upon production, cost of living, discontent and, finally, on the national will? That it would be serious "Albatross" evidently appreciates. He wishes to preserve at least some part of the coastal trade. His protection for a route some 1,200 miles long, would, I am convinced, prove entirely ineffective against the superior surface forces which, by hypothesis, could be brought to bear against it. His little escorts of destroyers would go the way of the "Mary Rose" and "Strongbow"; mines could only be used within very limited areas; neither air-craft nor submarines would present any real obstacle, even during the hours of daylight when alone they would be effective against surface craft's attack. An occasional passage would be made, but a great deal more than an occasional passage would be needed. Under his proposed system of land and air defences, Australia must be prepared to contemplate a cessation of her coastal, as well as her external, trade.

Invasion "Albatross" considers a "somewhat remote possibility." That being so, it seems strange that the principal object of his defence system is to provide against it. However, let that dialectical point pass. What if his "remote possibility" should occur?

When one considers the many plans which used to be made for the invasion of this Island, one point stands out—an obvious point: that we were almost always to be kept in doubt where the invasion would fall. Feints, diversions and other forms of stratagem were used to maintain a doubt of the real objective. Our own overseas expeditions when in the hands of skilled men, were marked by the same elementary principle of surprise which was so completely absent from the Dardanelles campaign. While the comparatively limited extent of this island furnished so many opportunities, the longer distances which separate the possible objectives in Australia afford a greater opportunity for tying down forces at one point while the true attack is carried through elsewhere. The defence policy of "Albatross", which obliges the scattering of force, has all the familiar defects of the "defensive cordon" combined with complete inability to put the enemy upon the defensive.

Certainly all the considerations which "Albatross" and his predecessors have raised demand examination, however erroneous they appear to be to those of us who believe local defence to be an unsound

foundation for an Imperial defence. If each portion of the Empire were to follow the same principles, we should find ourselves with a set of isolated fortresses, without co-ordination, weak everywhere, and not strong enough in the fundamental element—the power to move troops or trade; in other words without mobility. A neighbour who is affected with acquisitive propensities would be able to deal with each in turn, as the young man did in the fable of the bundle of arrows. He could proceed on the principle of "limited objectives," moving his frontiers gradually, each move embracing a new base which would bring him nearer his final objective. The policy of local defence, once it goes beyond the essential needs which have hitherto always governed it, is a temporary palliative and no more. It merely postpones the eventual evil day.

Co-operation with the common aim of re-establishing superiority at sea has been recognized by every man capable of expressing an opinion as being the essential basis of security for a scattered oceanic Empire. Those who recommend any other course are advocating a policy which has led others to disaster. The remedy for the danger against which "Albatross" wishes, as we all wish, to provide is the bolder policy of restoring the Empire's sea power—a policy, incidentally, which it is not beyond the financial capacity of the Empire to adopt.

THE EARDLEY-WILMOT PRIZE ESSAY

SUBJECT: "CHANGES IN NAVAL WARFARE OWING TO NEW AND MODIFIED WEAPONS"

By LIEUTENANT-COMMANDER P. W. BROCK, R.N.

PROGRESS in naval warfare has sometimes been compared to a graph whose fixed points are provided by the results of war experience. Up to, perhaps, the beginning of the XIXth century, the graph rose very slowly and the fixed points were numerous, so that, even at the time, its course was clearly defined. More recently, however, the curve has tended to rise sharply and the points have been too few and their accuracy too much affected by factors difficult to analyze—for action conditions are scarcely those of a laboratory experiment—to enable it to be traced with the same certainty. The difficulty increases as the curve approaches the present; and extrapolation is more doubtful still, since the slope may be altered by entirely new factors which have not yet been determined.

The military mind in general, and the British military mind in particular, has been accused of preparing always for the last war. "Men held in the grip of discipline, moving perilously from fact to fact, and staking their lives at every step, are nearly always opposed to new ideas."[1] The charge has some foundation, but it is less true now than it was in the past. Having seen almost incredible ideas become facts within the period of a decade, even the most conservative must recognize the accelerated tempo of technical progress; and among military thinkers there are prophets of an advanced school whose theories may be quite as dangerous as those of the reactionaries. Doctrines which were accepted as axiomatic have now been challenged, chiefly as a result of the rapid changes in weapons. It is frequently argued, for example, that the aeroplane has altered the very nature of war; that a decision may now be obtained by air attack on the civil population and the internal organization of a country; and further, that should this fail, the introduction of the new weapon, whose speed and power of movement in three dimensions make defence impracticable, has so completely altered the value and power of the other armed forces that by no stretch of the imagination can the old principles be considered applicable to modern war.

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[1] Churchill: "Marlborough," Vol. II.

It would be out of place in this essay to deal in detail with the possibilities of air attack on the nerve centres as the decisive factor in war to-day. Should the extreme view be accepted without qualification, any discussion of naval warfare becomes one of merely academic interest. One may, however, agree that under certain conditions an ill-prepared country would rapidly succumb to the terror from the air in the hands of a strong and ruthless opponent, and yet believe that under other conditions the decision may still rest with the older forces, which employ aircraft as only one of the weapons in their armoury. Distance, counter-attack, improved defensive methods, wastage of machines and pilots, shortage of essential materials, fear of reprisals, and the conflicting claims of a wide range of objectives may combine to prevent air power from obtaining the immediate overwhelming results sometimes predicted for it. For these reasons, and others which Admiral Sir Herbert Richmond has set forth in his *Sea Power in the Modern World* it is here assumed that the aeroplane has not yet rendered sea power obsolete. Nevertheless, skilfully employed, it may effect a radical alteration in the conduct of naval war within a very short space of time.

Even the most cherished " principles " require critical examination in the light of recent changes in weapons. To arrive at a sound estimate of the effect of these changes, it is necessary to consider them with both knowledge and imagination, tempered by the results of experience in war and experiment in peace. In the past, too much emphasis has sometimes been placed on war experience which, though invaluable, was too limited and too much affected by unrecognized, and perhaps temporary, conditions to be an entirely reliable guide. On the other hand, lessons which should have been learned in peace were not properly assimilated. Yet all such research is inadequate if it does not take into account the human factor, and the effects of war both upon the man and upon the weapons he wields.

[The author then reviews the changes in weapons and the influence of those changes on naval warfare, (*a*) prior to 1800 A.D. ; (*b*) during the XIXth century ; (*c*) between 1900 and 1918 A.D. Considerations of space have made it necessary to omit this section from the publication of the Essay.—EDITOR.]

A SUMMARY OF DEVELOPMENTS UP TO THE END OF THE WAR.

Before considering the nature and effect of the latest developments, it may be well to obtain some idea of their general tendency in the past. Amongst other characteristics, the following seem to be significant :—

1. *The acceleration of technical progress.*—In more recent years the development of weapons had been much more rapid than in the

past.[1] This was made possible by wider scientific knowledge and improved methods of research. Moreover, though complaints of the conservative outlook of the seaman were still common, he had become much more disposed to adopt innovations than ever before, as was only natural in a scientific age.

2. *Additional types of vessels and new requirements for all types.*— The introduction of new weapons had led to new requirements, both in the form of new types of ship, and in additional needs on the part of the older types. Thus destroyers became an essential part of the main fleet for both offensive and defensive purposes, and were also destined to assist in mine sweeping and mine laying, as well as in the protection of trade. Cruisers were required to support or drive off destroyers; while part of their former duties, that of reconnaisance off the enemy's ports, had now been assumed by the submarine, which could escape attention by submerging. The submarine had also become a dangerous commerce raider, if international law was neglected. Aircraft had to be embarked in ships, and the carrier had arrived. Ship design had been affected by the desirability of giving the heavier ships immunity, as far as might be, against the newer forms of attack.

3. *The increased cost of naval armaments, largely due to competition.*— In addition to the cost of providing new weapons, and antidotes for them, the cost of naval armaments had been greatly increased by international competition. Efforts had been made to build ships more powerful than those of possible rivals, who in turn had increased their own efforts. In consequence, any advantage thus obtained was fleeting, and no ultimate gain in security resulted, but prior to 1922 this consideration did not serve to check competition, which was limited only by the power of the purse and the building capacity of the competitors.

4. *Increased speed and range, and improved communications.*— Speaking generally, we may say that the effect of increased speed and range, and the improvements in communications as a result of wireless telegraphy, produced a virtual contraction of the area of strategy, and an actual extension of the tactical area: an example of the former was the removal of the Grand Fleet to Scapa and the Firth of Forth; the latter is apparent in the actions of the War.

Speed had become almost a fetish, even to the extent of a real sacrifice of fighting power. One of its tendencies was to force an immediate decision upon a Commander-in-Chief whose information was incomplete, as happened to Sir John Jellicoe at Jutland. When fleets could close at forty knots or more, quickness of decision became

[1] Vide Appendices I and II.

essential, and a few minutes might suffice to put a ship out of action even at a considerable range.

Increasing speeds were both a cause and an effect of increased reliance upon oil fuel. This was a fact which might be of great strategic importance, since of the larger naval Powers only the United States produced adequate supplies of oil fuel at home.

5. *The tactical and technical skill demanded by modern weapons, coupled with increasing reliance upon machinery.*—The task of the Admiral was also made much more complicated by the diversity of modern weapons. If the Grand Fleet, propelled by turbines and manœuvred by flags and wireless, was more mobile than a fleet of ships of the line, it consisted of a larger number of ships of different types and functions, and it had to be prepared to meet a form of attack which greatly enhanced the difficulty of obtaining a decision. Great technical skill on the part of a certain percentage of the personnel had also become a primary requirement. The side whose ability and equipment enabled it to hit first and keep on hitting secured an advantage which did not obtain when fire power was relatively weak, and it was laid down that " the gunners shall not shoot any great ordnance at other distance than point blank." [1]

On the other hand, many operations which had formerly to be carried out by human effort were now being performed mechanically, so that as long as the machine continued to function there was a contrary tendency to eliminate the human element to some extent. But the most important factors remained under human control, and human errors or mechanical breakdown could still reduce the machines to impotence.

6. *The varying value of weapons.*—The relative value of weapons has not been constant at all periods. In the case of the gun, modifications in the weapon or in the armour which opposes it have at various times altered its power. In the case of new weapons, once they have overcome initial opposition and inertia, there is often a tendency to overrate their effect. " It is always imagined that new weapons possess an infallibility that the old ones lack, because we do not have for the former the same means of appreciation as for the latter. Unfortunately, up to the present, the advantages of weapons have always been compensated by the disadvantages to which they gave rise, and in times of peace we naturally only give importance to the advantages." [2] Thus the fireship had her day and then almost dis-

[1] Sir Walter Raleigh's instructions of 1617. *Fighting Instructions*, 1530–1816. (Navy Records Society).

[2] Daveluy: *The Genius of Naval Warfare*, Vol. II. (Translated by Philip Alger).

appeared; the ram, discarded by the sailing ship, was re-adopted when the gun was in partial eclipse, but once more fell out of favour when the gun regained its advantages; the torpedo-boat for a time was hailed by some as having made the battleship obsolete, but was countered by the destroyer, which first relegated the former to a secondary role, and later assumed her functions. Similarly, the submarine enjoyed a period of superiority which was subsequently lost; and the paravane reduced the initial threat from the minefield. Hence the capital ship, with suitable defensive measures, retained her supremacy at sea; though the possibility that a skilful or lucky opponent might get home with a torpedo or mine made that supremacy less secure than it had once been.

Although the experience of the Great War suggested that the new power of the flotilla could not always be relied upon, yet it demonstrated that there was at least a possibility of it redressing an inferiority in heavy ships. There were, moreover, the potentialities of the air flotilla to be taken into account for the future.

DEVELOPMENTS SINCE THE WAR

Of the changes likely to affect naval warfare which have taken place since 1918, the most striking is the growth of air power. Remarkable progress has been made, both in aviation in general and naval aviation in particular. As regards naval aviation, the progress has taken three forms, each affecting the others:—

(1) Improvement in the performance of aircraft, with respect to speed, radius, load, equipment and reliability.

(2) Improvements in the methods of carrying aircraft at sea, including the development of the aircraft carrier and the invention of the catapult, which has enabled aircraft to be used in much greater numbers.

(3) As a result of (1) and (2) much valuable experience has been gained, leading to greater efficiency both in the handling of individual machines and in the operation of aircraft generally, and to extension of the uses of aircraft for naval purposes.

Ten years ago it was quite commonly said that the limits of the performance of the aeroplane were being approached; nevertheless progress has continued, and there appears to be room for further development even without taking into account the possibility of a radical alteration in design and propulsion. The speed and range of all types

have increased. The bomber and torpedo bomber can carry a more powerful weapon and deliver it with greater accuracy, while it is probable that they are rather less vulnerable to the fighter than they were some years ago. Equipment has been improved in almost every detail. Deck landing has become quite commonplace in the eighteen years since it was first attempted, and it can now be carried out at night. Weather, too, is much less likely to interfere with air operations, at least in time of war when greater risks would be justifiable than in peace. It is probable that a sea heavy enough to prohibit flying under war conditions would also be heavy enough sensibly to reduce the efficiency of surface craft. Reliance on naval aircraft has therefore greatly increased, both for independent action and for use in conjunction with ships, and a number of types are required.

An air striking force now has a wide choice of weapons and methods of attack. The former may include light, medium or heavy bombs, torpedoes, and machine guns (and gas, in the case of a nation unscrupulous enough to disregard its pledges); while the type of bomb may be chosen so as to inflict damage on impact, after passing through moderate protection, or under water if a close miss is obtained. Methods of attack may include high or low bombing, point-blank bombing, or machine gun attack on exposed personnel, and torpedo attack. Smoke can readily be laid, if desired, to cover most of these operations.

Reconnaissance machines have extended the vision of surface craft, and improvements in air navigation have justified greater dependence on information thus obtained. Practice has also shown that air spotting can be an invaluable aid to gunnery, particularly under difficult conditions, and has lengthened the effective range of the gun. Fighters are required for the protection of ships and aircraft, and for harassing the enemy's aircraft.

The principal limitations of aircraft for naval purposes may be briefly enumerated under the following headings:—

(1) Their use may be restricted or prohibited by fog, darkness or heavy weather.

(2) They cannot maintain a continuous bombardment, unless they are available in larger effective numbers than are at present possible at sea.

(3) The effect of their weapons is not as formidable as those which can be carried in ships—assuming an equal probability of hitting.

(4) Their endurance is limited, and increasing their load reduces radius of action, and vice versa.

(5) They must remain in motion.
(6) Accurate navigation is difficult.
(7) The practical value of spotting and reconnaissance depends on good communications which may not always be possible in action.

Considerable progress, however, is being made towards minimizing most of these limitations.

It is to be noted that there is a tendency for the performance of naval aircraft to lag somewhat behind that of shore-based aircraft, largely due to the necessity, or at least desirability, of choosing a type of machine which is suitable for more than one role and to the difficulties of operating aircraft from ships. It appears, therefore, that a ship-borne air force is likely to be somewhat handicapped in performance as well as in numbers when opposed to aircraft working from large modern shore bases.

Second in importance only to the rise of air power is the change in the naval situation which has occurred as a result of the tendency, already noted, of competition vastly to increase the size and numbers of ships, and consequently expenditure. To avoid a new and ruinous competition which threatened to arise after the War, it seemed desirable to restrict it by mutual agreement, in the form of the Washington and London Treaties. By their terms, the maximum size, armament, and, in effect, the numbers of practically all classes of fighting ships belonging to the signatory Powers have been arbitrarily limited. Like most compromises, the Treaties have proved a mixed blessing. If Britain has been saved a competition which she could ill afford, she has taken unprecedented risks. In view of the experience of 1914-18, it can hardly be maintained that the strength of her cruisers and flotilla is adequate for security; and the maximum size laid down for capital ships and cruisers has naturally become the normal size. Hence all countries affected by the Treaties have been committed to the policy of building a limited number of ships of a size which seems unnecessarily large; and since Britain's wider commitments require greater numbers of ships, this has affected her position adversely. It is to be observed, also, that the cost of capital ships is now so heavy that only the chief naval Powers have laid down modern battleships—and then only in small numbers—and that the life of the battleship, "modernized" to a greater or less extent in various cases, has been much longer than in the earlier years of the century. For these reasons, except in the case of the comparatively few new ships, the protection of the existing battleship against her smaller adversaries has not been improved to the full extent which the latest constructional developments would

permit. Nevertheless, her resistance to the torpedo and mine has been considerably increased; though against this must be set the greater number of torpedoes now carried by destroyers, their improved performance, and possibly better methods of control than those used in the late War. This protection is, of course, equally effective against the underwater weapons employed by aircraft, and the anti-aircraft armament is both more powerful and much more efficient than it was a few years ago. Horizontal armour has been thickened against the bomb. Other advances include improvement in the equipment for night action, and the saving in weight effected by the adoption of welding for many purposes.

The extent to which aircraft can threaten the existence of the ship, and the effectiveness of anti-aircraft fire are two of the problems most urgently in need of solution. Discounting lucky hits, however, it is suggested that to obtain a high probability of success, aircraft at present must attack under conditions which give the defence a reasonable chance, if not of destroying the enemy, at least of impairing their accuracy of aim. In view of this, and the limitations already mentioned, an overwhelming stroke by aircraft would seem to depend either upon a surprise attack or else upon attacking in numbers too large to be engaged by the defence—numbers which are not often likely to be available except within range of shore-based aircraft.

In gunnery, perhaps the most notable development besides those already referred to, is the improvement in the armour-piercing shell; but here again, the advance may be offset by the greater range permitted by aircraft spotting.

The present position of the submarine is a matter of some speculation and controversy, but it seems likely that the counter-attack, with air assistance, has at least kept pace with advances in the submarine. Effective anti-submarine measures, however, depend on adequate numbers of suitable patrol and escort vessels. Treaty restrictions have prevented the building of sufficient destroyers; but the sloop has not been restricted, numerically, except by financial stringency.

The transformation from coal to oil fuel is now complete in all classes of fighting ships, and is progressing in merchant vessels. In addition to this, the demands of industry and the increasing requirements of both the Army and Air Force make the problem of maintaining the oil fuel supply one of primary importance for all countries which have to rely upon oil from overseas. A partial solution may lie in the production of oil from coal and in the development of other fuels, but a solution must be found, for the technical advantages of oil prevent a reversion to the use of coal in fighting ships.

Progress in wireless telegraphy promises to free its use from at least some of the disadvantages attending it in the late War. It may also be of service in the navigation of both air and surface craft.

Navigation has been further simplified by some mechanical aids which should assist to prevent such a difference in reckoning as occurred at Jutland.

Chemistry has been turned to legitimate naval uses in the production of smoke. The offensive use of chemical warfare has been ruled out by international agreement, yet recent opinions expressed in foreign journals make it seem doubtful whether such agreement is an entirely reliable safeguard. To many it must appear that the objections to the use of gas against enemy combatants are as illogical as those raised against the use of the gun, the shell, and the torpedo when they were innovations. As Mr. Pyecroft's Number One observed, " Hell's Hell, and when there, study to improve." [1] It may be accepted however, that Britain has no intention of using gas; and even if no convention existed, it is doubtful whether gas is a real contribution to the horrors of naval war against a trained enemy owing to the difficulties of using it effectively at sea, and the defensive advantages afforded by ships' facilities. None the less, it would be unwise to neglect anti-gas training based upon a close study of chemical progress.

In general, the latest developments appear to have been a continuation of those in progress at the end of the late War, with the exception of the artificial check upon competition imposed by the Treaties—whose life is now scarcely an insurable risk. For the rest, the rate of technical progress shows no signs of deceleration; aircraft have added fresh types of weapons, given added speed, range, and vision, made new demands upon their technical attendants and the tactical skill of the commander, and threatened the whole scale of weapon values; and mechanization is proceeding to a degree which might almost be considered ridiculous, if it were less expensive.

NAVAL WARFARE TO-DAY.

Resisting the temptation to speculate upon the possibilities of a future which may hold an ocean studded with seadromes, vast fleets of submersible ships, and monstrous amphibian flying boats, skies darkened with aircraft of all types, and weapons ranging from wireless-controlled germs to the " death ray " so regularly heralded by the popular press, it is proposed to confine consideration of the effects of changes in weapons

[1] Kipling: " The Bonds of Discipline."

on naval warfare to the situation as it exists at present. Even this is not without grave difficulties. The influence of air power, which is the most uncertain factor, has not been ascertained by experience in war—for the recent brief flare-up in Greece cannot be regarded as throwing any real light upon the results to be expected from modern weapons at sea—and the value of peace-time exercises is reduced, on the one hand by the safety precautions which would be disregarded in war, and on the other by the purely hypothetical effects of counter-attacks on aircraft. Further, the situation is by no means static. It would therefore be dangerous to be too dogmatic, and the conclusions drawn here must be regarded as tentative and liable to be modified by developments, nor are they to be regarded as either detailed or comprehensive.

STRATEGICAL CONSIDERATIONS

The use of aircraft introduces an additional complication in the problems of higher command. The majority of the greater Powers have created a separate air force controlled by its own Ministry, partly to provide for the air defence of the country and partly to secure economy of supply, training, and administration. In Britain, the question of aircraft for purely naval purposes has resulted in a compromise—the Fleet Air Arm, under a form of divided control. But in addition to ship-borne aircraft, the need for shore-based aircraft, properly equipped and trained to protect bases and shipping in the approaches, would be felt in war. Will they be available? One writer has expressed the view that—

"Many members . . . of the senior Services . . . persist in regarding the primary role of aircraft as auxiliary. They do not face the fact that their cardinal role in home defence is independent of that of the land and sea forces. They do not for example realize that if London was being subjected to aerial bombardment, every available machine, including those normally allotted for naval and military co-operation, would be required for the protection of the capital—by local defence and by the counter-offensive."[1] Yet, however vital the protection of London, the security of supplies is equally important to the existence of the country, while the Air Force itself depends largely upon sea-borne supplies. It is clear, therefore, that the allocation of aircraft in war is likely to be a vexed problem, and this is one of the reasons why a Ministry of Defence finds many supporters. Whatever the solution, provision of aircraft for naval needs must be made. Moreover, effective co-operation of aircraft with naval forces for the attain-

[1] Brigadier-General P. R. C. Groves: "Behind the Smoke Screen."

ment of naval objects demands naval training and command. As Admiral Richmond has pointed out :—" Objectivity, not subjectivity, is the true principle which should inform and govern the constitution of a fighting force. All of those instruments which have the common function of operating at sea with the object of obtaining and exercising control of the sea are instruments of the sea service." [1] It has been suggested that if the principle of subjectivity at present obtaining were carried to its logical conclusion, submarines should be placed under the control of the Ministry of Agriculture and Fisheries.

The speed and the power of movement in three dimensions which the aeroplane possesses make counter-attack difficult, and hence it is essentially an offensive weapon. Full use should be made of the new power of attacking the enemy in his base. Conversely, our own bases should be out of easy range of air attack, and should be adequately equipped with anti-aircraft defences. In combined warfare, unless surprise is effected, air power is likely to assist the defending side, for reasons already mentioned. It may even be doubted whether a combatant would normally risk an operation involving the transport of troops overseas through an area within range of a strong concentration of hostile aircraft unless air superiority can be obtained or the passage made under cover of fog or darkness. Increasing use of darkness in all naval operations is to be anticipated.

It must be remembered, however, that owing to the difficulty of accurate navigation and the very marked increase in the number of aircraft required to maintain an efficient patrol as the depth of reconnaissance is increased, the radius within which aircraft can operate effectively over the sea is definitely limited. At present this radius is probably of the order of 150 or at most 200 miles.[2] There are therefore still vast areas of sea in which aircraft can play only a minor role, and if close blockade is impossible, naval power can still exercise pressure by cutting off contraband supplies in these areas. Further, in spite of the mobility of aircraft, the possibility of effecting surprise should not be too lightly dismissed, since it is improbable that the demands on the opposing air force will be so few that the enemy will be able to maintain continuous patrols and a striking force trained in naval work in instant readiness at all points.

The aeroplane, like the submarine, has reduced the absolute nature of command of the sea, but as long as the great bulk of supplies and

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[1] Admiral Sir Herbert Richmond : " Sea Power in the Modern World."

[2] *Vide* lecture by Wing Commander W. R. Dyke Acland, printed in the R.U.S.I. JOURNAL, May, 1934.

men must be transported in ships, command of the surface of the sea is essential, and at present superiority in men-of-war is the most effective and economical, and, in distant waters, the only means of obtaining it. If the fruits of this command are to be enjoyed, however, it is equally necessary to protect shipping against destruction by the new weapons.

The defence of trade against attack by surface raiders on the high seas, by aircraft in the focal areas and by submarines in both is not an easy problem, particularly under the conditions imposed by the Treaties, but it is one which must be faced immediately. The convoy, which defeated the submarine, is not likely to be as effective against aircraft with their greater mobility and range of vision, and the relative advantages of concentration and dispersion of shipping will have to be weighed. Means of defence, both active and passive, should be available from the outset, for delay may be fatal once hostilities have started. Full use must be made of the scanty number of escorts, and close co-operation with the navies of any allies will be essential in order to economize force, unless the Admiralty of the defending Power possesses to an unusual degree the art of making bricks without straw.

Tactical Considerations.

Owing to financial and Treaty restrictions, the surface craft engaged in a fleet action to-day would be unlikely to be as numerous as those which took part at Jutland, and to this extent the Commander-in-Chief's task would be simplified. On the other hand, his difficulties would be greatly augmented by the problem of safeguarding his vulnerable aircraft carriers, and of employing his aircraft to the best advantage. Further, his tactics must be adapted to operating both with and without aircraft, since there is always the possiblity that weather may deprive him of their services.

It has sometimes been suggested [1] that a simplification could be effected by doing away with the torpedo in surface craft. This would certainly simplify the enemy's problem, but the corresponding gain is not apparent, since a position suitable for counter-attack on the enemy's flotillas is usually suitable for a torpedo attack on his battle-fleet, and the fleet would be deprived of a weapon which may prevent the enemy from developing his maximum gunfire and which is admirably adapted to offensive action by night, as well as being invaluable in a defensive action. The co-ordinated employment of all arms may be difficult of execution, but in its attainment seems to lie the best prospect of successful action.

[1] E.g., by Captain Acworth in " The Navy and the Next War."

The selection of an objective for the air striking force will necessarily depend upon circumstances, but the enemy carriers must frequently present the logical primary objective. If they can be disabled before their aircraft have taken off, air superiority should be easily obtainable; otherwise it must be hard to achieve, since the endurance, numbers and powers of the fighters are unlikely to be adequate for the purpose. The principle of concentration is of great importance in the air offensive; attacks delivered in penny numbers are likely to make aircraft nearly as ineffective as if they were employed in a purely defensive role.

The extended reconnaissance permitted by aircraft reduces the chances of an unexpected meeting between fleets, but an air striking force offers a new means of forcing action on a reluctant opponent, by crippling some of his more important units. Though it may not be conceded that aircraft have anything like the infallibility and destructive power attributed to them by a section of the press, it must be remembered that, under present conditions, even the partial disablement of a few large ships may have very serious consequences; and hence defence against air attack must be developed to the fullest possible extent. Apart from attack on the enemy carriers by both air and surface craft, the gun is the chief weapon of defence against enemy air action. A sharp look-out, prompt identification of enemy machines, a sound distribution of fire, and judicious conservation of ammunition are essential to its effectiveness over a long period. All units, including cruisers and destroyers, should be prepared to co-operate. Among passive measures of defence are adequate structural strength and avoiding action. The open order necessary to give all ships freedom of action will be facilitated by the limited number of ships, and it will serve to reduce the menace of the torpedo.

Weather has always been an important factor in naval warfare, even after sail gave way to steam, but it is interesting to note that the development of new weapons has enhanced the importance of meteorological conditions. Weather may not only seriously hamper air operations but may even prohibit all flying. The direction of the wind relative to the course of the fleet after deployment or during pursuit affects the operation of aircraft carriers, and possibly the handling of the whole fleet, if it is necessary for the carriers to stand into danger to fly off their machines. The accuracy of bombing and air navigation are both affected by variable winds; while clouds may enable bombers to obtain surprise or render them ineffective. Atmospheric conditions and wind also govern the efficiency of smoke and gas.

It has already been suggested that greater use may be made of darkness to reduce interference from aircraft, and thus night action

may be of even greater importance than formerly. Progress in illuminants, communications, and equipment generally has done a great deal to rob night action of the element of chance which once governed it entirely. It will always be more hazardous than day action, but "Some occasions in our profession . . . will justify if not require more hazard to be ventured than can be systematically defended" [1] and a well trained and equipped fleet should be able to seek night action, confident that its relative efficiency will not be diminished by darkness and may be expected to produce more rapid and conclusive results.

Policy.

The preceding paragraphs have suggested some results to be anticipated from new weapons. If these are accepted, what policy should be pursued by a nation wishing to set its naval affairs in order?

Foremost should be the attempt to secure international agreement:—

(1) To reduce the size and cost of all types of ship to the minimum which will permit them to fulfil their functions effectively.

(2) To modify the restrictions on the total tonnage of cruisers and destroyers, which have lately limited them to numbers which bear no relation to needs.

Of equal importance is the necessity for co-ordinating defence policy as a whole, and of securing, in actual practice, effective co-operation between the air flotillas and surface craft in the attainment of carefully considered objects.

Every effort should be made both towards increasing the air strength of the fleet, which should not be concentrated in a few large vulnerable carriers, and also towards strengthening its anti-aircraft defences by every possible means.

As far as peace conditions permit, every problem should be investigated scientifically and imaginatively, taking into account all the factors which may affect it in war. A correct building policy depends upon the answer to such problems as the extent to which aircraft can replace cruisers for reconnaissance with the fleet; the optimum size of the aircraft carrier; the relative value of structural protection, as against small size and handiness, in the defensive strength of the ship; the possibility of new anti-aircraft weapons; and a host of other factors which readily suggest themselves.

Problems, particularly those involving aircraft, should be kept under review, to keep pace with developments in the weapons; and

[1] Lord Howe to Sir Roger Curtis: Barrow's "Life of Howe," p. 379.

there should be no hesitation to replace ships by aircraft if and when it is shown that this can be done with economy and efficiency. Incidentally, it may be noted in considering economy, that calculations which take into account only the initial cost of the weapons, neglecting their effective life, their range, endurance, general usefulness, and reliability may be very misleading.

In all such investigations the difference between war and peace conditions must be borne in mind, and constant endeavour must be made correctly to anticipate the demands of war.

The rapidity of progress makes it dangerous to lag behind opponents in the matter of equipment, but mechanization should not be pressed for mechanization's sake. It is wasteful folly to provide elaborate instruments to eliminate small errors when large human errors remain uncorrected, and a machine which will not withstand the stress of war is a deception.

Finally, it must be remembered that sea power does not rest on the fleet alone, and provision for the security of bases and supplies, including the all-important fuel, is essential to the fleet and to the industrial and economic strength of the nation, which is the foundation of all.

CONCLUSION.

Of necessity, in this essay, emphasis has for the most part been laid on material and technical factors, but it is important to reiterate a warning note against the purely materialistic outlook which it is only too easy to adopt to-day. It is true that machines now perform more effectively many operations which were formerly carried out by human means, and have multiplied human powers. It is true that to send men into battle with inferior weapons is to handicap them unfairly, and may be to send them to a hopeless, if glorious, death, like that of Cradock and von Spee. But to neglect the man in the pursuit of mechanical perfection is an equally fatal error. The weapon is less important than the use which is made of it: the power of the aeroplane is valueless without the directing skill of the pilot. Man invents the weapon, man selects, develops, and controls it, man may improvise when the machine breaks down.

The words of Alfonso de Chaves, written in the early XVIth century,[1] still hold good :—

"And if they say that the enemy will take the same thought and

[1] Alfonso de Chaves: "Espejo de Navegantes" (The Seamen's Glass), quoted in "Fighting Instructions, 1530–1816." (Navy Records Society).

care as I, I answer that when both be equal in number and arms, then in such case he who shall be more dexterous and have more spirit and fortitude—he will conquer, the which he will not do, although he have more and better arms and as much spirit as he will, if he be wanting in good order and counsel."

APPENDIX I.

A CHRONOLOGY OF NAVAL DEVELOPMENTS.

I.—GUNNERY.

A.D.	
1249	Francis Bacon's treatise on gunpowder.
1314	Guns made in Ghent exported to England.
1330–40	Guns introduced into British ships.
1488	The " Sovereign " of Henry VII—141 small guns.
1509–47	Henry VIII—progress in gunnery included invention of gun-port and introduction of heavy gun at sea.
1545	Action between French and English described by Morogues.
1609	Phineas Petts' " Prince Royal "—prototype of ship of the line.
1637	The " Sovereign of the Seas "—first three-decker.
1690	Shells said to be used at sea by M. Deschiens.
1746	Robins advocated rifling.
1760	Unsuccessful British experiments with shells on Acton Common.
1778	Carronade invented.
1779	Douglas's improvements.
1788	Russian fleet used shells against Turks.
1822–25	General Paixhan's works.
1837	French adopted Paixhan's shell gun.
1838	Shell trials in H.M.S. " Excellent."
1839	Shell adopted by Royal Navy. (Previously confined to small bomb vessels.)
1841	Shell adopted by U.S. Navy.
1853	Battle of Sinope.
1858	Armstrong gun adopted.
1862–63	The " Prince Albert "—6-turret mastless ship. U.S.S. " Monitor."
1863	B.L. gun in disfavour—reversion to M.L.
1879	The " Collingwood "—prototype of the pre-Dreadnought battleship.
	B.L. gun re-introduced.
1905	The " Dreadnought " completed.

2.—Steam Propulsion and the Screw Propeller.

XVIIth Century	Various experimental engines.
A.D.	
1764	Watts started investigation.
1768	Screw propeller suggested.
1769	Watt's double impulse engine.
1786–88	Experimental steam-propelled craft.
1803	Symington's tug, " Charlotte Dundas."
1807	Fulton's " Clermont."
1812	Bell's " Comet."
1813	Fulton produced plans for steam man-of-war.
1821	Paddle tug " monkey "—first steam vessel in the Royal Navy.
1828	Sir John Ross's treatise on naval tactics under steam.
1835	Royal Naval Engineers introduced.
1836	Smith and Ericsson both patented screw propeller.
1837	Ericsson's screw rejected by Admiralty. Steam frigate " Arrogant."
1843	The " Rattler "—first screw ship built for Royal Navy.
1845	The " Rattler " v. " Alecto " trial—screw adopted.
1871	Committee on design pronounced against fully rigged ship for the line of battle.

3.—Use of Iron and Steel for Construction and Armour.

A.D.	
1815	Iron pleasure boat on Mersey.
1836	Admiralty rejected Laird's proposed iron frigate.
1839	Admiralty bought iron paddle packet " Dover."
1840	S.S. " Great Britain "—first large iron ship.
1842	U.S. made first appropriation for an armoured ship.
1844	Six iron tenders to flagships, lightly armed, for Royal Navy.
1842–45	Experiments with armour in Britain and France.
1846–51	Experiments convinced Admiralty of unsuitability of iron, because of splinters and jagged holes.
1853	Destruction of Turkish wooden ships at Sinope.
1854–55	Armoured floating batteries proved value in Crimean War.
1855	French abandoned unarmoured wooden ships.
1857	French armoured frigate, " Le Gloire."
1858	French armoured frigate, " Couronne."

A.D.	
1859	The " Warrior " laid down.
1860–61	Unarmoured wooden ship construction suspended by Admiralty.
	Opposition to iron still existent but losing ground.
	Wooden ships being cut down and armoured.

4.—Torpedo.

A.D.	
1775	Bushnell's " submarine magazine."
1797–1810	Fulton's experiments.
1861–65	Spar torpedoes in American Civil War.
1864	Whitehead induced by Captain Lupins of Austrian Navy to commence design.
1869	Whitehead invited to England.
1872	Manufacture of torpedoes commenced at Woolwich.
1877	First used in action—H.M.S. " Shah " v. " Huascar."
1891	Chilean " Blanco " first vessel sunk by locomotive torpedo.
1896	Gyroscope adopted.
1902	Beginnings of heater system.
1905	First used in a day attack on battle fleet at Tsushima.

5.—Submarine.

B.C.	
400	Greeks and Egyptians used a kind of diving bell.
A.D.	
1620	Van Drebel's submersible exhibited on Thames.
1776	Bushnell's attack on H.M.S. " Eagle " off New York —first use in war.
1801	Fulton offered submarine to France, unsuccessfully.
1864	Three submarines in Confederate Navy. One sank U.S.S. " Housatonic "—first success in war.
1875	First Holland submarine.
1888	French " Gymnote " of 30 tons.
1900	Britain ordered five submarines from Vickers.
1905	First serious German submarine construction.
1912–13	Balkan War—first torpedo attacks by submarine.
1914	Great War—first successful torpedo attacks by submarine.
1916	German " unrestricted " submarine campaign.

6.—Use of Aircraft in Royal Navy.

A.D.	
1909	Bleriot flew the Channel.
1912	Aeroplane flown off H.M.S. " Hibernia."
1913	First carrier built as such—H.M.S. " Hermes."
	First torpedo carrying aeroplane.
1917	Grand Fleet Aircraft Committee.
	First deck landing on H.M.S. " Furious."
1918	Sir Richard Phillimore appointed Admiral Commanding Aircraft.
	Arrester gear tried.
1923–26	Catapult invented.
	Aircraft carried in submarine " M.2."
1927	First night deck-landing at sea.
1928	Slotted wings and wheel brakes.
1930	Catapults being fitted to capital ships and cruisers.
1931	Rear-Admiral Commanding Aircraft Carriers appointed.

APPENDIX II.

DECISIVE RANGES.

The pre-war ranges given are based largely on the late Sir Reginald Custance's study, " The Ship of the Line in Battle." Later ranges are approximate only and represent a purely personal opinion. " ' Decisive range ' may be defined as that at which the one combatant develops such a superiority of attack that the other ceases to be able to offer further opposition." (Sir R. Custance, *op. cit.*, p. 8.)

Period.	*Weapon.*	*Decisive Range.*
Ancient times.	Ram, boarding, various missiles, etc.	In contact.
Nelsonic times, circa 1800.	Gun (or boarding).	Close alongside.
Crimean War, 1854–55.	Later smooth-bore guns.	800 yards.
" Shah " v. " Huascar "	M.L. Rifled guns.	Under 1,200 yards.
Sino-Japanese War, 1894.	B.L. guns.	Under 2,500 yards.
Russo-Japanese War, 1904–05.	Guns, 12 in. and under.	Under 5,000 yards.

Period.	*Weapon.*	*Decisive Range.*
Great War (1916).	Guns, 11 in.—15 in.	8,000 to 14,000 yards, depending on visibility, protection, etc.
To-day.	Guns, 15 in.—16 in.	
	(*a*) Without aircraft spotting	14,000 to 18,000 yards ?
	(*b*) With aircraft spotting	20,000 to 25,000 yards ?
	Sea-borne aircraft.	Effective striking range, 150 miles radius.

UNIFORMS, EQUIPMENTS, STANDARDS AND COLOURS OF THE BRITISH ARMY

IN the last two quarters' JOURNALS details were given of the organization which has been devised to compile a Summary of Information on the Uniforms, Equipments, Standards and Colours of the British Army.

The following have been nominated as Regimental Representatives in connection with the Scheme :—

Regiment.	*Representative.*
Life Guards	Captain R. E. S. Gooch.
Royal Horse Guards	2nd Lieutenant E. A. H. Legge-Bourke.
1st King's Dragoon Guards	*Not nominated.*
The Queen's Bays	Major G. H. Fanshawe.
4th/7th Dragoon Guards	Lieutenant R. G. Lawrence.
5th Royal Inniskilling Dragoon Guards	Lieut-Colonel G. E. N. Booker, C.B.E.
The Scots Greys	Lieut.-Colonel G. F. A. Pigot-Moodie, M.C.
3rd Hussars	President, Regimental Institutes.
7th Hussars	—
8th Hussars	*Not nominated.*
9th Lancers	The Officer Commanding.
10th Hussars	Major G. E. Gosling, M.C.
12th Lancers	Major H. Lumsden, M.C.
13th/18th Hussars	Brigadier-General A. Symons, C.M.G. (13th H.). Brigadier-General C. K. Burnett, C.B., C.M.G. (18th H.).
14th/20th Hussars	Brigadier - General J. Gilbert Browne, C.M.G., C.B.E., D.S.O.
15th/19th Hussars	The Right Hon. Lord Carnock, M.C.
17th/21st Lancers	Major M. G. Mickolls.
Royal Artillery	Secretary, R.A. Institution.
Royal Engineers	Lieut.-Colonel E. V. Binney, D.S.O.
Grenadier Guards	Regimental Adjutant.
Coldstream Guards	Regimental Adjutant.
Scots Guards	Superintending Clerk, F. Morley.
Welsh Guards	Regimental Adjutant.
The Royal Scots	Captain H. M. McCance.
The Queen's Royal Regiment	*Not nominated.*

Regiment.	*Headquarters.*
The Buffs	Captain C. R. B. Knight.
The King's Own Royal Regiment	Lieut.-Colonel L. I. Cowper, O.B.E.
The Royal Northumberland Fusiliers	Brigadier-General C. Yatman, C.M.G., D.S.O.
The Royal Warwickshire Regiment	Major J. C. Knyvett.
The Royal Fusiliers	Captain H. Oakes-Jones, M.B.E., F.S.A.
The Royal Norfolk Regiment	Major A. J. Shakeshaft.
The Lincolnshire Regiment	*Not nominated.*
The Devonshire Regiment	Lieutenant P. S. Leeper.
The Suffolk Regiment	Officer Commanding, Depot.
The Somerset Light Infantry	Major-General Sir Henry Everett, K.C.M.G.
The West Yorkshire Regiment	Major C. Hinchliffe.
The East Yorkshire Regiment	Lieutenant R. G. Oliver.
The Leicestershire Regiment	Officer Commanding, Depot.
The Green Howards	Lieutenant T. F. J. Collins.
The Royal Scots Fusiliers	Officer Commanding, Depot.
The Cheshire Regiment	Colonel A. Crookenden, D.S.O.
The Royal Welch Fusiliers	Major M. B. Dowse.
The South Wales Borderers	Colonel R. F. Gross, D.S.O.
The King's Own Scottish Borderers	Officer Commanding, Depot.
The Cameronians	Officer in charge of the Regimental Property and Relics Fund, Depot.
The Royal Inniskilling Fusiliers	Major E. E. J. Moore.
The Gloucestershire Regiment	Major R. M. Grazebrook, O.B.E., M.C.
The Worcestershire Regiment	Officer Commanding, Depot.
The East Surrey Regiment	Major H. H. Stacke, O.B.E.
The Duke of Cornwall's Light Infantry	Lieut.-Colonel A. W. Stericker, D.S.O.
The Duke of Wellington's Regiment	Major R. H. W. Owen.
The Border Regiment	Lieut.-Colonel P. J. Shears.
The Royal Sussex Regiment	*Not nominated.*
The Hampshire Regiment	The Secretary, Regimental Committee.
The South Staffordshire Regiment	Lieut.-Colonel M. B. Savage, C.B.E. D.S.O.
The Dorsetshire Regiment	*Not nominated.*
The Prince of Wales's Volunteers	Officer Commanding, Depot.
The Welch Regiment	Major A. C. Whitehorne, O.B.E.
The Black Watch	Colonel R. F. H. Wallace, C.M.G.
The Oxfordshire and Buckinghamshire Light Infantry	*Not nominated.*
The Essex Regiment	Officer Commanding, Depot.
The Loyal Regiment	Major A. R. Bare, D.S.O., M.C.
The Northamptonshire Regiment	Officer Commanding, Depot.
The Royal Berkshire Regiment	Major E. F. Eagar.
Royal Marines	Captain J. S. Hicks, R.M.
The Queen's Own Royal West Kent Regiment	Captain H. N. Edwards.
The King's Own Yorkshire Light Infantry	Officer Commanding, Depot.
The King's Shropshire Light Infantry	Captain N. M. Hughes-Hallett.

Regiment.	*Headquarters.*
The King's Royal Rifle Corps . .	Chairman, Historical Sub-Committee, Celer et Audax Club.
The Wiltshire Regiment . . .	Officer Commanding, Depot.
The Manchester Regiment . .	Lieutenant T. B. L. Churchill, M.C.
The North Staffordshire Regiment .	*Not nominated.*
The York and Lancaster Regiment .	Officer Commanding, Depot.
The Highland Light Infantry . .	Lieut.-Colonel A. N. E. Browne.
The Gordon Highlanders . . .	Captain V. A. H. D. Denne.
The Royal Ulster Rifles . . .	Officer i/c Museum, Depot.
The Royal Irish Fusiliers . . .	Lieutenant A. N. Barnard.
The Argyll and Sutherland Highlanders	Brigadier-General A. E. J. Cavendish, C.M.G.
The Rifle Brigade	Major H. G. Parkyn, O.B.E.
Royal Army Service Corps . .	Captain C. H. Massé, M.C.
Royal Army Ordnance Corps . .	Lieut.-Colonel A. W. Hidden.

It is suggested that any of our readers who are interested in the uniforms, etc., of any particular regiment should communicate direct with the Regimental Representative. Letters addressed to the Institution in connection with this matter will be forwarded if the envelope is marked " Uniforms."

The Institution will undertake the work of compiling the Summary as reports are received from the Regimental Representatives. It will greatly facilitate this work if such reports can be sent in as complete a form as possible. The Library already possesses a fairly complete set of Regimental Histories; but it is most desirable that the details of uniforms, etc., given in these should be checked, as it is known that they are not in all cases accurate. Copies of catalogues of the exhibits in Regimental Museums would be of assistance to the Central Committee.

Census of Colours.

A Summary of Information (Census) as to the whereabouts of all existing Colours of the British Army is also being compiled in card index form, and suitable cards for recording further information on this subject will be forwarded on application to the Librarian, Royal United Service Institution. Regimental Representatives are asked to co-operate in completing this Census.

MILITARY HISTORY AND MODERN WARFARE

By " JUNIPER "

ALL great commanders have stressed the value of studying military history. " Read and re-read the campaigns of the great captains " said Napoleon, and " History is the only true philosophy." Every young officer is told to read military history, and each year a campaign is set for study. Few officers, however, seem to understand how military history should be read, and so waste a great deal of time and effort with little practical result.

Some people seem to think that little of value can be obtained from the study of past wars because conditions have changed so enormously. It is hoped to show that there is a middle course between those who only live in the past and those who will have nothing to do with it—the " Bow and Arrow School " and the " Futurists." The chief objects of our studies should be to discover lessons for the future and to gain an insight into the human element in war. The human element often seems to be the only stable factor in a changing world. Military history may also be studied with the special objects of learning something about the topographical features and climate of a potential theatre of war, or the characteristics of a possible enemy. A study of history, in addition, trains the minds of budding commanders.

No two campaigns are similar. A student of war, therefore, should endeavour to read as many as possible, and the more dissimilar they are the better. He will thus learn about war in all its varying aspects.

Military history should be studied, and not merely read. Many histories make interesting reading—for instance, Henderson's " Stonewall Jackson " ; but, if they are read as novels, the student will gain little of value. Nor is it any good committing to memory a large number of facts, figures and dates. It is the deductions we draw from history that are of value, especially with regard to future wars. For this reason little of value can be learnt from a study of the tactics since " tactics change every ten years," and future war will probably be as different from the last as chalk from cheese. In fact, to draw any sort of parallel, we should probably have to go back to a distant past.

The chief points that the student should look for in military history are :—

(1) The problems as they presented themselves to the commanders in each situation and how they dealt with them ; and the reasons for success or failure.

(2) The human factors—psychological and physical. How situations acted and reacted on the minds of commanders and troops, and the physical capabilities of men and horses, remembering that " What man has done, man can do."

(3) The lessons and principles brought out by the campaign, for future guidance.

The student should take each situation as it arose, place himself in the position of the commander, and " appreciate the situation " from his point of view with *only the information available to him at the time.* This is most important, for a commander seldom knew all the facts and often a great deal of his information was wrong. To know all makes the problem easy. It would, therefore, be unfair to judge him with information that only came to light later. Having made his appreciation, the student should compare his plan with the commander's, and note where he thinks his own is better and where the commander's.

The next exercise is for the student to organize and arm the forces of both sides according to present war establishments and re-consider the situation; then to organize and arm them as they will probably be, say, ten years hence and appreciate the situation afresh. He should make any adjustments of dispositions or locations which would obviously be demanded by modern weapons. He should then remodel the whole campaign assuming that both sides had modern arms. He might then come to the conclusion that the campaign would have been fought out in a totally different way ; this will be a good exercise to follow out. Such exercises as these are excellent for future commanders. " It is not genius," said Napoleon, " which reveals to me in a flash what I must do, but previous thought and study." In this way " The outline of things to come " may be forecasted with tolerable accuracy.

The human element in war is always interesting. The will power of a commander is constantly subjected to a host of outside pressures ; on the ability with which he can resist them will depend to a large extent the success of his plans. All great commanders expected great, and at times incredible feats of endurance from their men. Napoleon and Jackson often marched their troops thirty miles a day, and on one notable occasion Jackson marched a brigade fifty miles in 24 hours. Tamerlane's army, each man mounted on one horse and leading three r four others, marched normally a hundred miles a day, crossing

mountains, deserts and large rivers. The cowboy of South America thinks nothing of riding a hundred miles in 24 hours. Such, then, are the feats of which men and horses are capable. Does it not entitle one to think that men and horses trained to such heights might be able to keep up with a mechanized force ?

The principles of war are said to be constant, but no two captains agree as to what exactly they are.

Stonewall Jackson summed up the art of war as " to mystify, mislead, and surprise the enemy." This phrase " contains all the law and the prophets." To mystify the enemy commander is to surround him with the fog of war so that he does not know when, where, or from what direction the next blow will fall. This may be accomplished by spreading false information and by the skilful use of detachments. To mislead him is to convince him that the blow will fall at some place other than that selected, and may be achieved by feints and other means. To surprise him implies that he is unprepared for the blow when it does fall, and in order to bring this about, it will be necessary to move sufficient troops secretly and swiftly to the decisive area. Unless one side is overwhelmingly superior, this order of events is almost invariably followed. Classic examples are Napoleon's campaign of 1796 and Allenby's of 1917.

In peace-time we pay little, and in war scarcely more, attention to the principles of mystifying, misleading, and surprising. It is against the Englishman's nature to deceive. It is all the more necessary, then, to have courses or schools where all methods for accomplishing these ends are studied, and where commanders and staffs are trained in their use. Some of the methods now used or suggested are amateurish. On manœuvres the composition, strength and location of all the enemy troops are known, so commanders have much fuller information than they would ever have in war, and gain little practice in one of the most difficult problems they may have to face. To obviate this disadvantage the director of an exercise might hold a force in reserve under his own hand to throw in as he decided on one side or the other. On some manœuvres in India, use was made of State troops, which were given to one side, and whose existence was unknown to the other. Their appearance on the field of battle misled the commander of the other side and produced surprise. In the recent manœuvres in Italy, a reserve force was used by the Director to influence the battle, but on this latter occasion both sides knew the strength of the reserve force and that it would be used either for them or against them, so some of the effect of surprise was lost. It is suggested that some such device, either of a reserve force or an unexpected weapon of war, should be employed in

exercises to mislead and create surprise. The greater the surprise, the greater the value.

The first principle given in the Regulations is "Concentration," which is defined as the concentration of the maximum force at the decisive time and place. But if history is studied, it will be found that victory is frequently gained with considerably less than the maximum force. To concentrate it at the outset militates against mystifying, misleading, and surprising, and so defeats its own object. A too liberal interpretation of this principle has sometimes led to disaster. Gideon in his night attack on the Midianites (Judges, chapter 7), concentrated only 300 men out of 32,000. He was successful because he relied on *surprise* and *quality*, rather than *quantity*. Tamerlane advanced on a front of two hundred miles, but his mobility enabled him to concentrate on the centre in one day, or on either of the wings in two. In the Great War, we put large numbers of men into a small area without attempting to distract the enemy, and suffered in consequence. The Germans, by blows in Turkey, Serbia, Rumania, Russia, and Italy, were more successful. They made us disperse our forces and led up to the campaign of March, 1918, which might have ended the War if their higher direction had been more able. To take an extreme case, if a commander can cause such distraction of his opponent that the latter has only one man left at the decisive point while he himself has two there, he will have fulfilled the principle of concentration.

Alexander's campaigns are worth study. He crossed the deserts into Mesopotamia during the burning heat of summer and surprised the Persians who thought such a feat impossible. He again surprised them by crossing the snow-covered mountains into Persia in the depths of winter with only a handful of his "Companions," and caught them in winter quarters. If he had concentrated his "maximum force" he could not have moved till the season was more favourable, and so would have lost his opportunity. We can also learn from his tactics. On the field of battle, though generally outnumbered, he was invariably successful. He placed the bulk of his cavalry—the main hitting arm in those days—on one flank, to distract the enemy commander, and his infantry in the centre to pin him. With his "Companions"—a picked body of horsemen sworn to victory or death, he sought a way round the enemy's other flank, and from there charged home straight at the enemy commander. If we substitute "mobile force" for "Companions" we can discover a good lesson for the use of a modern mechanized formation.

These are but a few examples from ancient and modern history which show that there is a wide field for research. The average officer's

time is all too short to explore all history for the lessons and principles of his art. What is needed is a Research Department to make a deep study of history, wedded to an inventions branch which would keep in touch with industrial developments. This would only be bringing us into line with up-to-date businesses. The department would provide the food for the " thinking department," or General Staff, to chew, and possibly some also for the Administrative Departments, for instance, the study of " mobility " which we seem to have lost.

War has changed more in the last thirty years than in the previous three centuries, till now it more probably resembles some of the campaigns of the ancients than those of more recent times. Mechanized armies have brought back the mobility of Genghis Khan, Tamerlane, and Alexander. An examination of their campaigns might be profitable. Perhaps we might even see one set as a subject for study.

The British are naturally suspicious of genius. As a nation we respect character and physical prowess. The " swat " at school is despised, probably because he is often a miserable creature physically. In after life the extra-studious is sometimes considered " odd." It is only lately in the Army that officers who endeavoured to study their profession were not thought freaks. Some seniors are still inclined to discourage originality in their juniors ; perhaps because it requires too much mental effort ! Such national characteristics are reflected in the military sphere. We excel in smartness, physical fitness, skill at arms, technical training, and the moral qualities. As far as battalions, and equivalent units in the other arms are concerned, our Army is the best in the world. But in strategical and tactical skill we are not so outstanding. It has been said that our Generals are " damn good at supervising platoons, but damn bad at commanding divisions." This is undoubtedly a libel. But the tendency now is to turn out *le bon Général ordinaire*, of a fairly high standard it is true, rather than a few geniuses and a large number of mediocrities. The great commanders were seldom " sound " or " normal." The " safe " and " sound " commander finds it difficult to surprise his enemy because his actions can be foreseen. Study a nation's drill books and you may know what to expect of its Generals.

Our higher commanders do not get sufficient practice in handling troops in the field, which is essential for training commanders. This, owing to lack of money, is not easy to remedy. The next best substitute is to be found in war games in which the wits of one man are pitted against those of another, at little or no cost. War games and exercises based on situations of actual campaigns can be of value in studying Military History. Some exercises and manœuvres should be set with

the special object of encouraging originality and surprise, so that commanders may experience some of the fog that is always present in war. Unless they are taught to create, and meet such situations, the chances of successful action with our small Army in a European war will be slight.

Military history shows:

(1) That " to mystify, mislead, and surprise the enemy " are the first essentials in war.

(2) That quality is preferable to quantity.

(3) That a small force that can surprise is better than a large one that cannot.

(4) That a commander must retain his liberty of action while restricting that of the enemy's.

(5) That administrative sufficiency and efficiency are vital. Modern armies, with their mechanization, are more dependent on good communications. They cannot " live on the country." Hence they are very susceptible to failure of supplies. Our tendency now is to over-insure administratively so that the anomaly has arisen that an endeavour to increase speed has actually reduced it. Perhaps something more might be done in supplying troops, especially mechanized forces, by " air."

THE DOCTRINE OF STRATEGICAL BOMBING

By MAJOR OLIVER STEWART, M.C., A.F.C.

THERE is no aspect of modern warfare about which politicians and people in the Services are less inclined to speak openly than the line of demarcation between what is and what is not a legitimate bombing objective. Military authorities will declare with one breath that the bombing of towns as towns is entirely inadmissible and with the next that the primary function of fighting aircraft will be to protect towns against bombing. To the impartial observer it would seem that there is a good deal of hypocrisy about the way in which this whole subject of aerial bombardment is treated in peace-time. No better corrective to such hypocrisy, no better introduction to a rational approach to the doctrine of strategical bombardment, could be imagined than the fifth volume of the Official Air History of the War.[1]

This history is issued by direction of the Historical Section of the Committee of Imperial Defence and is based upon official documents. Volume IV was dealt with in the JOURNAL of May, 1934. Volume V completes the story of the German air raids on Great Britain during 1917 and 1918, and indicates their effect upon British war policy. It is this effect which is of such importance at the present moment and which deserves the closest study; for it is still sufficiently fresh in our minds to enable us to recall the outcry that was raised when the Germans took to bombarding London from the air, and how it was claimed that they were violating all the rules of war. Yet it now seems clear that the strictly military effect of the German policy was considerable and that her policy of strategical bombardment was justified.

Mr. Jones handles his great mass of complicated material in a masterly fashion and enables his readers to follow the actual course of the German raids and to trace their repercussions upon the actions of the Allies. On the night of the 2nd September, 1917, really significant bombing began: an attack was made on Dover by two aeroplanes

[1] *The War in the Air*, by H. A. Jones (Oxford University Press, 30/- with case of Maps).

flying low which appeared over the town without warning; they dropped their bombs and disappeared before any searchlights or guns could get into action. Fourteen bombs, two of them converted 9.84 in. trench-mortar shells, weighing 91 kg. were traced. They killed one officer and injured one officer, three men, four women, and two children. Damage estimated at £3,486 was done. On the following night two aeroplanes crossed the coast at Westgate and dropped two bombs at East Northdown Farm, Margate, and five on St. Peter's, but the only damage was to window-glass. Chatham was bombed at about the same time with much more serious results. Two bombs hit the drill hall at the naval barracks in which several hundred men were sleeping. "A terrible scene followed," writes Mr. Jones, "and when the victims of the raiders came to be counted it was found that one hundred and thirty naval ratings were dead and eighty-eight wounded. The remaining bombs which fell on the town destroyed a house and damaged property, in addition, a naval rating and a woman were killed and three men, three women, and two children injured."

Those raids are of interest, not only because they may be said to have started more serious raiding and to have initiated defence by single-seater fighters—for the experiments in flying "Camel" aeroplanes by night followed immediately—but also because they struck at military and civilian objectives at the same time. The fact that women and children were killed and injured was a sufficient reason for it to be claimed that the raids were contrary to the usage of civilized nations at war; but how far were those claims part of the essential machinery of war-time propaganda and how far were they justified in reason? That is a more difficult question. No one could deny that military damage had been done; the casualties inflicted upon the naval ratings alone repaid the raid so far as military economics are concerned. Before carrying the argument further, let us recall the raid of the 13th June, 1917, when the greatest number of people were killed in any one raid.

The morning of this day was fine but there was a fair amount of haze. At 10.43 a.m. a German aeroplane was seen approaching Margate and shortly after it dropped five bombs which caused only slight damage. Meanwhile the main formation, from which the Margate raider had detached itself, continued across the Thames Estuary and at 10.50 approached Foulness Island. Three more aeroplanes appear to have detached themselves there while the main body of the formation, consisting of fourteen Gothas, went on to London. A good many people still remember how they approached, in diamond formation, in full view. Bombs began to fall at 11.35 a.m. and in all 118 were dropped on London. One hundred and sixty-two people were killed and four

hundred and twenty-six injured, and once again those who wished to hold up the enemy to execration on the grounds that they were breaking the rules of war had their opportunity. One bomb, weighing 50 kg., fell on the Upper North Street Schools at Poplar; it passed through the roof and three floors of the school to the ground floor. In its passage through the building, during which two children were killed, half of the bomb was torn away, but the remainder exploded among sixty-four children; sixteen of them were killed and thirty more, together with two men and two women, were injured. No wonder a wave of indignation swept the country. But—and here again we approach our essential question—was that indignation good or bad for the Allied cause? To say that it stiffened the country's determination to win the war may be psychologically correct; but it is indisputable that it also stiffened the country's determination to bring aeroplanes back from France with which to offer a more adequate defence.

The Government decided that the Air services must be doubled and the War Cabinet discussed the desirability of making a raid on some town in Germany, such as Mannheim, by way of reprisal. Even so, Major-General Trenchard stated in his famous memorandum of the 15th June that "Reprisals on open towns are repugnant to British ideas." The material effect was that Sir Douglas Haig was instructed to send one squadron home from France and to move another to Calais.

The absence of these squadrons from the General Headquarters' Wing in France, according to Mr. Jones, was "markedly felt." So far as the Germans were concerned, they regarded the raid as successful and the commander, Hauptmann Brandenburg, in his report, said that "Of all our bombs it can be said that the majority fell among the Docks and among the city warehouses. The effect must have been great." Now a study of the map which Mr. Jones provides, showing the distribution of bombs, will convince the reader that it is probable that all the bombs were in fact aimed at docks, warehouses, and railways. Bombing errors, under the best conditions at that time, were greater than they are now with modern sights and modern methods of release; moreover the intense anxiety which must have afflicted the crews of the machines when operating at what seemed at that time to be a great distance from their own territory would impair bombing accuracy. It is possible, and even probable, that the German raid was directed at military objectives and that the responsibility for the deaths of women and children should, logically, rest upon those who permitted them to remain so close to such objectives.

There can be no doubt that a town in any industrial civilization, is a military objective: it provides the sinews of war; it houses those who

direct the war; it is a nexus of communications; it is a centre of propaganda; and it is a seat of government. Blind bombing of a town as a town might logically be defended; the bombing of docks, warehouses, railways and factories in a town certainly can be defended. Extreme importance attaches to clear thinking on this matter at the present moment with the air forces of the world being built up to greater and greater dimensions. It should be frankly and openly admitted by serious authorities, as well as by sensational writers to the press, that the aerial bombardment of open towns will probably, almost certainly, be a feature of any future war. To assert—as is constantly asserted—that bombing aeroplanes are being prepared for the sole purpose of attacking enemy aerodromes and so of preventing their bombers from attacking our aerodromes, is to evade the issue. Are those bombers—our own and other nations'—really intended solely for attacking each other's aerodromes? It is an idea which must make a strong appeal to the civilian population, but has it any basis in fact? The doctrine of strategical bombardment, which has been advocated more cogently by General Groves than by anybody else, is that of attacking military objectives beyond the theatre of ground warfare with long range bombing machines. It resembles in most particulars what I have called the doctrine of "central shock," in which the bombers of an air force are devoted, primarily, at the outbreak of war to direct attacks upon the enemy's centres of government, population, and industry. The question of what the enemy bombers are doing will not matter for the moment; there will be a race to see which side can cripple the whole of its opponent's organization first. I cannot conceive that, if a fleet of a hundred bombers is known to be on its way to London, British bombers will be sent to bomb the enemy's aerodromes; such a mild form of reprisal would scarcely be regarded as an adequate counter-attack.

The history of the war of 1914 is in strong support of the doctrine of strategical bombing, as Volume V of Mr. Jones' work demonstrates more clearly perhaps than ever before. The following are his own words upon the matter:—"The German air-raiding campaign has been surveyed and it is now possible to examine the balance sheet. On the question of morality little need be said here. Opinion during the War was divided, certainly in Germany, where some pleaded for air attacks on Great Britain directed solely towards breaking the spirit of the civil population, while others wanted the raids confined to objects of military importance . . . Democracies, perhaps, get the sort of war they deserve. So long as war was confined to strictly professional armies so long might a code of manners survive, but as soon as it became an affair of nations it was inevitable that popular clamour

should often override purely military considerations." That sentence shows Mr. Jones to be one of the few realists who have investigated this matter. He is able to regard the events unemotionally, and it is, perhaps, because of this ability that the volumes he has contributed to this work are so valuable. He sums up the arguments for strategical bombing and " central shock " as follows :—" On military grounds, the air attacks were overwhelmingly justified by the results. In 51 airship raids, 5,806 bombs were dropped which killed 557 persons, caused injury to 1,358 and inflicted material damage estimated at £1,527,585. There were 52 aeroplane attacks in which 2,772 bombs killed 857 persons, injured 2,058 and caused damage to a total value of £1,434,526. These figures are important, but what mattered, from the purely military point of view, was the diversion of men and material to home defence. At the beginning of June, 1918, there were in Great Britain, ready for action, 469 anti-aircraft guns, 622 searchlights, 258 height-finders, and 10 sound-locators (out of an establishment of 664) manned by 6,136 officers and men. The fighting strength of the operational squadrons of the VI Brigade was 376 aeroplanes, although no more than 166 are shown as efficient at the beginning of June, 1918. The Brigade absorbed the services of 660 officers, 3,639 men, and 315 women. The Balloon Wing, which worked the apron scheme, had a strength of 82 officers and 2,573 men. Much material and labour were required to build the aerodromes, gun stations, air-raid shelters, etc., and tens of thousands of rounds of ammunition were assembled. The cost of an anti-aircraft round varied, but it would probably not be far wrong if £2 was reckoned as the minimum all-in cost to the Government of a 3-in. round. There were occasions, when barrage-fire was employed, during which 20,000 rounds or more of anti-aircraft ammunition were fired in one attack at a cost exceeding the material damage inflicted by the enemy bombs. As the life of a 3-in. gun was only some 1,500 rounds, the wastage of guns, reckoning a volume of fire of 20,000 rounds, was at the rate of thirteen or fourteen for the attack. When these various figures are considered, the strength of the German striking force should also be borne in mind. Up to May, 1918, the greatest number of bombers which set out to attack England was twenty-seven. For the final raid, on the 19th-20th of May, 1918, forty-three started. The whole British defensive organization was maintained to meet the threat from this comparatively small striking force and the more remote threat of occasional airship attacks. Also of great importance was the effect on the output of munitions and of factories generally. . . . Official figures for some raids show that when an attack was in progress, seventy-five per cent. of munition workers, in areas warned of the attack, ceased work, and that the output continued to be restricted for about twenty-

four hours after the raid had ended." In those words Mr. Jones makes out a complete case for strategical bombing. and concludes what I regard as the more important part of this volume.

The volume also deals with the air operations connected with the military campaigns in Egypt, Sinai, the Western Desert, Darfur, Palestine, Arabia, Mesopotamia, and in Macedonia, and with naval air operations in the Mediterranean and Red Sea. Finally, there is an account of the training developments at home, in Egypt, and in Canada. The chapter which deals with the use of seaplanes from carriers is of interest, for it gives a hint of the possibilities inherent in ship-based aircraft. In January, 1916, the seaplane carrier, " Empress," with two Short and four Sopwith Schneider Cup seaplanes, reinforced the Port Said base from England, and at the end of the month the " Ben-my-Chree," " Empress," " Anne," and " Raven II," and the air unit at Port Said, were grouped to form a single command under Squadron Commander C. J. L'Estrange Malone of the " Ben-my-Chree." The duties of this composite unit included overland reconnaissance of the approaches to Egypt through Syria and Sinai and bombing attacks on enemy centres along these routes, reconnaissance of the western desert, air patrol of the Syrian and Sinai coasts, of the Red Sea, and of the Gulf of Aqaba and, finally, air operations to distant bases in the East Indies.

An account is given of the sortie of the two German cruisers " Goeben " and " Breslau " from the Dardanelles in January, 1918, when the two monitors " Raglan " and " M.28 " were destroyed. The " Breslau " was sunk by mines which she hit, according to this account, as a result of having to zigzag to avoid aircraft attack. The " Goeben " was attacked with 65 lb. bombs and then with 112 lb. bombs without result. For six days she was subjected to intermittent bombing attack and she got away afterwards under her own steam and reached Constantinople. Fifteen tons of bombs had been dropped during the time she was grounded in the Straits.

In this part of the volume there is also the story of the adventure of two officers of the " Raven " who, during a flight in one of the Short seaplanes, lost their parent ship and landed on a coral reef off the most southerly island of the Maldives. Their subsequent efforts to keep alive and finally to reach their ship again formed the basis of a short story by Rudyard Kipling called " A Flight of Fact."

The history of the Gosport system of flying training is given towards the end of the book. This system was largely the invention of Lieutenant-Colonel Smith-Barry and it had a profound effect upon the methods used subsequently. Indeed the influence of the famous " Gosport

system " is still noticeable at the training stations of the Royal Air Force at the present time. But Colonel Smith-Barry's theory that advanced pupils should be " allowed to fly exactly as they chose, their experiments being limited only by the state of their own nerve " would hardly meet modern requirements in air training !

Accompanying this volume there is a case of maps which are of special value to the student of the German bombing raids. They show the courses taken by the machines and often throw much light upon the way in which the raids were planned. Mr. Jones is to be congratulated upon the way in which he has achieved his extremely difficult task and the reader is frequently constrained to admire the way in which he retains a firm hold upon the masses of facts with which he has to cope and the way in which he reduces them to an ordered perspective.

Finally, let us return to the point, which seems to be the important one to be noted when reading this volume, that strategical bombing, in so far as it has been tried in actual warfare, has proved a success. If it involves certain things which have hitherto been regarded as outside the rules of warfare between civilized nations two comments are possible : either that civilized nations ought not to make war on each other, or, alternatively, if they do, they must put up with the kind of war they themselves invent. Those sentimentalists who refuse to face the unpleasant facts of air bombing attacks upon towns should hang a notice in their homes with Mr. Jones' words inscribed upon it : " Democracies get the sort of war they deserve."

THE BREN LIGHT MACHINE GUN

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AT the beginning of the Great War the only machine gun in general use was a weapon weighing with its mounting somewhere about 100 lb. or more, and capable of prolonged fire at a high rate. Such weapons were the British Maxim and Vickers, the French Hotchkiss and the German Maxim. They were intended to be used in more or less fixed positions in support of the rifles which, in our army at any rate, formed the main source of infantry fire power at that time. Under the trench warfare conditions which so soon set in, the weight and bulk of these heavy machine guns were not serious objections, and their capacity for sustained fire was an advantage. They dominated the battlefield and it was obvious that they must become the mainstay of the defence. To meet the demand for more machine guns, the Lewis was brought in to supplement the Vickers which could not be produced in sufficient quantities.

The Lewis was altogether different in character from the Vickers. It was air cooled and was fired from the shoulder on a low bipod rest. It was also magazine fed and weighed, complete, about 30 lb. It was therefore a more mobile weapon than the Vickers, although it had not the latter's capacity for sustained fire. It was a weapon capable of being employed alongside the rifles or as a substitute for them under open warfare conditions, i.e., it could be taken forward in the attack, and a Lewis gunner could go practically anywhere that a rifleman could go. It was, however, still not possible to carry it by hand for long distances without fatigue.

The German version of this type of weapon was the so-called light Maxim. The French produced a gun called the Chauchat. All the above were light machine guns with characteristics different from those of the heavy machine guns in use hitherto.

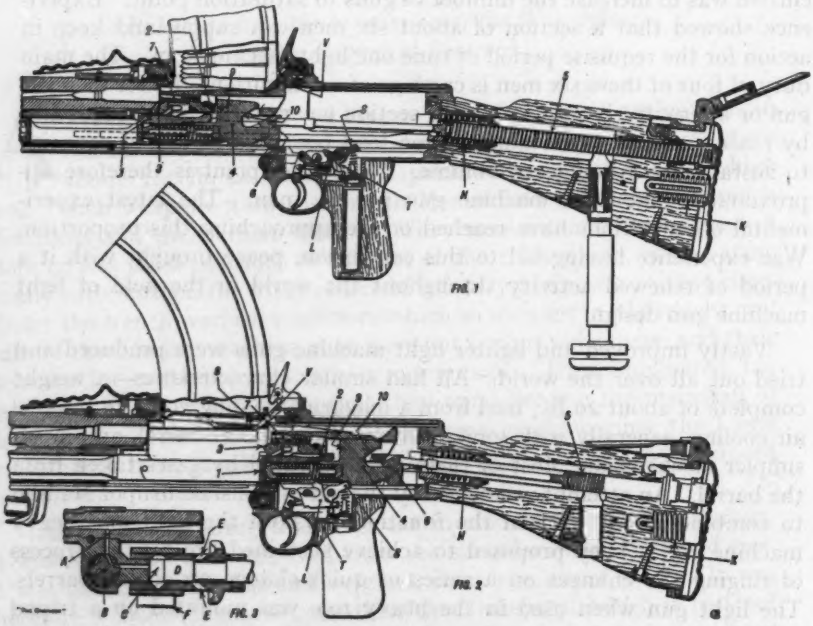
In theory their advent released the heavy machine gun for use in the role for which its characteristics made it suitable. In practice, however, the reliability of the light machine gun was not sufficient to justify this.

It was obvious that if the light machine gun could be still further lightened and its mechanical reliability improved, the fire power of the infantry, under all conditions, would be enormously increased. A single light machine gun served by two men is the equivalent in fire power to 20 men armed with rifles : the limiting factor in multiplying the number being ammunition supply only. On the assumption that the target for these guns would continue to be the unarmoured man, the logical conclusion was to increase the number of guns to saturation point. Experience showed that a section of about six men can supply and keep in action for the requisite period of time one light machine gun. The main duty of four of these six men is carriage of ammunition. Fewer men per gun or alternatively more guns per section means either loss of mobility by reason of the greater ammunition load per man, or loss of capacity to sustain fire in sufficient volume. Saturation point is therefore approximately one light machine gun per six men. The latest experimental organizations have reached or are approaching this proportion. War experience having led to this conclusion, peace brought with it a period of renewed activity throughout the world in the field of light machine gun design.

Vastly improved and lighter light machine guns were produced and tried out all over the world. All had similar characteristics—a weight complete of about 20 lb., feed from a magazine holding 20 to 30 rounds, air cooling, generally with some form of quick-change barrel, and much simpler mechanism. Most of them were operated by gases taken from the barrel. An attempt was made by the old-established firm of Madsen to combine in one weapon the functions of both the light and heavy machine gun. They proposed to achieve sustained fire by the process of ringing the changes on a series of quick-change air-cooled barrels. The light gun when used in the heavy role was mounted on a tripod weighing very little more than the gun itself. Stability was ensured by the use of spring buffering and the form of the tripod with two widely-spread legs at the rear. This attempt led to a great advance in the design of equipment of this kind, but has not enabled the light machine gun to compete with the heavy gun in its own field. Belt feed, water cooling, and heavy barrels have advantages where sustained fire at high rates is required, and these features are incompatible with a really light and mobile weapon. It is therefore likely that the two types of gun will remain in use. For certain purposes, notably use by cavalry, however, a light machine gun mounted on its light tripod can give sufficient sustained fire.

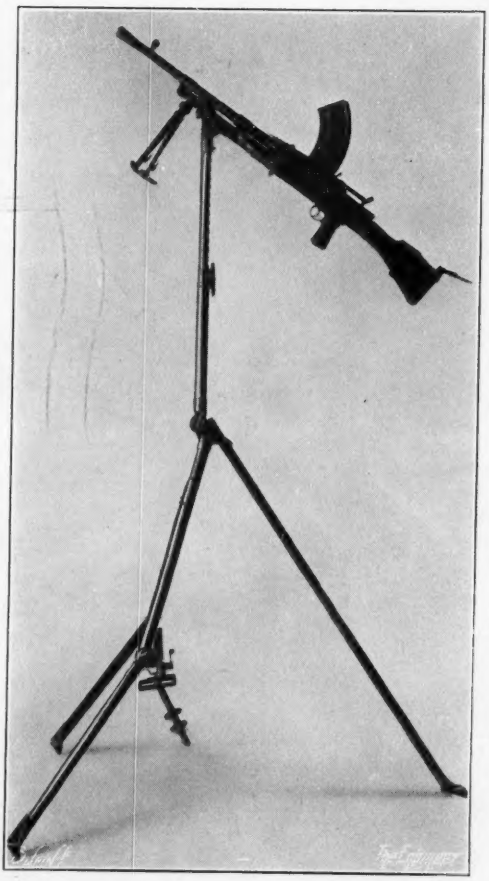
British trials of light machine guns to replace the Lewis began in 1922, but did not result in the adoption of any new weapon, although a

modification of the light Browning was recommended should the need arise. A new series of trials was started in 1930 in view of the very rapid strides made in design, and one of the guns selected for trials was the Z.B., made at Brno, in Czechoslovakia. This gun had already gained a very high reputation among those who had tried it, and very little experience showed that this reputation was well founded. It had qualities which made it altogether outstanding. The change-over from



the nitrocellulose propellant, for which the gun had been developed, to cordite, brought with it certain troubles due to the heavy metallic fouling caused by the latter. This entailed certain modifications to the design. The British rimmed cartridge also caused a certain difficulty in the feed to and from the magazine. The gun, modified to meet British requirements, was called the Z.G.B. The trials were concluded in 1934, and in 1935 the gun was finally approved for adoption under the name Bren, a word formed from the initial letters of its birthplace, Brno, and of the British factory at Enfield where it will be made.

The chief qualities of the Bren light machine gun are low weight, i.e., 21 lb. complete as compared to 31 lb. for the Lewis; extreme steadiness when firing; almost complete immunity from the effects of fouling,



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BREN GUN
ANTI-AIRCRAFT MOUNTING

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BREN GUN

LIGHT AND HEAVY MOUNTING

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dirt and dust; great freedom from breakage and stoppages; and the ability to maintain a high rate of fire for relatively long periods.

Its main features, which render the gun unique, are the system of buffering the moving and recoiling parts, and the arrangements for the collection and disposal of metallic fouling in the gas system.

The motive power of the Bren gun is gas trapped from the barrel through a port uncovered by the bullet in its passage. The bullet, in fact, corresponds to the piston valve of a steam engine. It is, perhaps, easiest to consider the sequence of events in the operation of the mechanism from the moment when the bullet passes the gas port (A, Fig. 3) and admits the gases from behind it. The gases are, of course, produced by the combustion of the propellant powder. From the gas port the gases pass through the gas regulator (B, Fig. 3). This regulator is provided with alternative passages of differing sizes to give control of the amount of gas passing and provide more or less power as required. This regulator can be rotated by means of the combination tool, to bring into use the aperture required and is then locked automatically. For manufacturing reasons the passages in the regulator are " dog-legged."

From the regulator the gases are directed to the rear in the form of a jet, into a chamber (C, Fig. 3) in the gas cylinder and impinge on the head of the piston (D, Fig. 3). A combination of impulse and pressure drives the piston along the cylinder and, through the piston extension, operates the breech mechanism. It will be seen that the chamber (C, Fig. 3) has ports in the cylinder wall which are covered by a sleeve. This sleeve is a working fit on the outside of the gas cylinder, and also forms the means of attachment of the bipod legs. The ports in the chamber (C, Fig. 3) form receptacles for the metallic fouling (chiefly cupro-nickel from the bullet envelopes) carried in the form of vapour by the gases and deposited on the relatively cool gas cylinder and on the inner walls of the sleeve covering the ports. If the gun is now rocked on its bipod (as it is in normal handling) the rotation of the cylinder within the sleeve will cause the fouling in the ports to break up. The blast of the gases then drives the broken fragments out of the cylinder through the set of ports (E, Fig. 3) when these are uncovered by the backward movement of the piston. A cup-shaped shield in rear of the ports protects the firer from the fragments ejected. The gas cylinder is thus self-cleaning. Apart from the automatic action, fouling can be quickly removed simply with the point of a bullet by sliding off the bipod sleeve and pushing the accumulated fouling inwards from the ports, which are bevelled inwards to facilitate the operation.

Continuing the action of the mechanism, the piston extension shown

in Fig. 1 (1 and 6) houses a component (4) which is supported in the piston extension by a helical cushioning spring interposed in the line of thrust of the piston. This serves to cushion the hammer blow which would otherwise be given to the mechanism. This is an important factor affecting the smooth action, reliability and long life of this gun. An upward claw-like extension of the component (4) travels in a recess in the breech block above it (2, Fig. 1). After a short free backward movement of the component (4) the face (10) of its claw engages a bridge piece in the breech block recess, and draws down its rear end from its seating against the body of the gun, thus unlocking the breech. The front face of the breech block carries beneath it the extractor (3), by means of which the fired cartridge cases are withdrawn from the chamber in the barrel. The short free movement of the piston group mentioned above causes a cam surface on the piston extension to come into contact with the underside of the extractor and holds it rigidly in engagement with the rim of the cartridge. This mechanical grip of the cartridge, independently of springs, is another unique feature of the gun. There can be no failure to extract.

After unlocking the breech block, further backward movement occurs; the fired cartridge case in the grip of the extractor is withdrawn and carried backward some three inches when the upper part of its base is brought against the ejector V. Being held at the bottom by the extractor, the cartridge case is tipped downwards and ejected sharply from the gun through the passage provided in the piston extension and bottom of the body. The mechanism is now in the position shown in Fig. 2. Incidentally the point of the ejector is chisel-shaped and its action is to indent the base of the cartridge case in the vicinity of the cap chamber, and to prevent loose caps (a defect which manifests itself from time to time) from coming out into the mechanism of the gun.

Fig. 2 shows the breech open and held by the sear (S), which has engaged with the " bent " formed in the under face of the piston extension. This is the normal " cocked " position, and that in which the mechanism stops on releasing the trigger or when the trigger mechanism is set for single shots. (The trigger mechanism provides for " Safe," " Single Shots " or " Continuous Fire," as may be required.) The backward movement of the piston-breech block group, acting through a push-rod, has compressed the return spring (5), which is housed in the butt. Should the backward movement not be completely arrested by the return-spring the buffer-spring (H) comes into action, by making contact with the face (6) of the piston extension. This buffer-spring is also, in effect, interposed between the butt group and the body group and absorbs the slight recoil movement, for which provision is made.

A second buffer-spring is located (at K) between the butt and butt-plate.

On pressing the trigger the drag link (L) (shown in Fig. 2 in the position for single shots) is drawn forward. The hook on its rear end comes against the tooth (T) on the sear (S), rotates the latter and disengages it from the " bent " in the piston extension. The piston-breech block group is then free to move forward under the action of the return spring. The breech block is carried forward, its front face meets the base of a cartridge in the mouth of the " overhead " magazine, sweeps it clear of the retaining lips downward and forward into the chamber of the barrel. In this movement the rim of the cartridge engages with the hook of the extractor (3). When right home in the chamber the rear end of the breech block is in a position to engage with the seating in the top of the body. The piston extension continues to move forward relatively to the breech block ; the sloping top face of the portion (6) thus raises the rear end of the breech block into engagement with its seating and locks the breech. It will be observed that the nose on the upper part of the drag link (L) lies in a groove on the under side of the component (4) housed in the piston extension when the mechanism is set for single shots. As the piston group slides forward over the trigger mechanism, the rear end of the groove meets the nose of the drag link, depresses it, and disengages the drag link from the sear (S). The sear then rises under the influence of its spring and is in a position to engage and hold the bent in the piston extension on its return to the rear. On releasing the trigger the hook on the rear end of the drag link again engages the tooth (T) of the sear. One pressure of the trigger, therefore, cannot fire more than one shot.

For continuous fire the safety catch is rotated, and its half-moon shaped stem is set to the position shown in Fig. 1, i.e., one corner bearing on the drag link and holding it in a fully depressed position.

The sear (S) resembles an inverted " L," of which the lower arm is in the form of a stirrup in which the drag link occupies the position of the foot. When set for single shots, the hook of the drag link (corresponding to the toe) is raised and engages with the top of the stirrup (the tooth T), action being as above described. When set for continuous fire the bottom hook of the drag link engages the cross-bar of the stirrup and, being held in this position by the safety catch, the nose of the drag link is withdrawn from the groove under the piston extension, and the sear is not, therefore, tripped ; it remains disengaged from the " bent " and the gun continues to fire so long as the trigger remains pressed or there is ammunition in the magazine. In an intermediate position of the safety catch, the rear-end of the drag link floats within

the stirrup without engaging either the top or bottom thereof, and movement of the trigger has no effect on the sear, which remains in engagement with the " bent." This is the " Safe " position.

On firing the last round in a magazine the platform (8, Fig. 2) descends into the cartridge-way. On the commencement of the next forward movement of the breech block its front end meets the magazine platform and is stopped in the breech open position, thus indicating the fact that the magazine is empty. On removing the empty magazine (with the hand previously holding the pistol-grip and pressing the trigger) the platform is withdrawn from the cartridge-way and the breech block released. It can, however, only move forward a very little way before it is stopped by the engagement of the sear with the " bent." On inserting a filled magazine in the magazine opening, the gun is once more ready to fire.

The accompanying Plates show the gun mounted for use in its three roles.

The extra two-piece leg required for anti-aircraft fire is normally carried in the main tubes of the tripod. A rifle can be used as a substitute if necessary, being fixed by the bayonet stud. The complete tripod weighs approximately 25 lb. and provides a wholly stable platform for indirect or overhead fire, or fire on fixed lines.

THE LOWER DECK, PAST AND PRESENT

By REAR-ADMIRAL J. F. SOMERVILLE, C.B., D.S.O.

On Wednesday, 30th October, 1935.

VICE-ADMIRAL SIR M. E. DUNBAR-NASMITH, V.C., K.C.B., in the Chair.

The CHAIRMAN introduced the Lecturer.

LECTURE.

PART I

THE subject of my lecture is so large that, in the time at my disposal, I must limit detailed examination of conditions on the lower deck to certain specific and relatively recent periods.

Information concerning mediæval times can be gleaned from various sources, but since the function of the mariners in those days was mainly to operate the motive power which enabled soldiers and gunners to fight the ship, a comparison of their conditions with those of the seamen in subsequent centuries is not very profitable. It is of interest to note, however, that in those early days the motive power employed was usually sail, and this, I suggest, has some connection with the Englishman's insistence on the liberty of the subject and his repugnance to the forced labour involved by the use of galleys or other craft depending primarily on human propulsion. This was in marked contrast to foreign navies where galleys manned by prisoners and slaves were employed to a considerable extent. It will be argued, perhaps, that impressment, with which I shall deal in due course, was a gross interference with the liberty of the subject and hardly indicated rigid adherence to the maintenance of this principle. This is frankly admitted by many writers and authorities in the past, but it was justified by them on the grounds that without impressment the fleet could not be manned in an emergency, and it was to the fleet that the people of this country looked for protection of their liberty. The Englishman's nationalism, based not on sentiment but on the liberty of the subject which it guaranteed, a liberty well in advance of that which could be found in almost any other country in the world, was, I suggest, a significant factor in persuading the men of the lower deck to accept unusual hardships, including impressment, from which the majority of landsmen were immune. There is clear evidence to show that, however ignorant

these men may have been in bygone days, they did at least appreciate that the defence of their nationalism, and consequently of their liberty, depended on the Navy and on the Navy alone. These old time seamen enjoyed a high reputation. The Venetian Ambassador, writing in 1588, says—" Englishmen are of a different quality from Spaniards, bearing a name above all the rest for being expert and enterprising in all maritime affairs and the finest fighters upon the sea."

THE SPITHEAD MUTINY

It was in 1797, the year of the Spithead and Nore mutinies, that conditions on the lower deck were brought forcibly into the limelight, and I propose to take this year as my starting point and to examine briefly life on the lower deck at that time.

Manning conditions were not normal, since there had been a recent and very marked expansion of personnel: in 1792 the number of officers and men borne in the peace fleet was 16,000; after the outbreak of war in 1793 this rose to 85,000 in 1794, and to 127,000 in 1797. Of this number a small part consisted of men who served almost continuously in the King's ships; the remainder, obtained by means of impressment, can be divided into two classes—seafaring men and landsmen. In the seafaring class would be found merchant seamen, fishermen, watermen, and long-shore-men; but the landsmen were a motley crowd.

The press, which was of ancient origin, having been sanctioned by Parliament in 1378, was intended to force fishermen and mariners from the sea towns, to serve in the fleet, but the press masters were not particular as to whom they impressed. Even in 1597 complaints were made that men taken by the press " did not know any one rope in the ship." There is abundant evidence to show that in 1797 this practice still persisted and unfortunate persons who had no connection with, or knowledge of, the sea were frequently seized by the press gang. Apart from these, debtors and men convicted of petty offences by the magistrates, and known as Lord Mayor's men, were given the alternative of prison or service in the fleet or in the army. These landsmen, who had no seafaring instincts and did not share the seamen's outlook on life are referred to in " The Tales of a Tar " by Captain Glascock published in 1836, where we read of two pensioners discussing " the breeze at Spithead," who declare that mutinies are never supported by " thoroughbred tars, but by King's benchers, gally growlers, jail birds, and jaw breaking chaps regularly brought up to the bar." Although a scrutiny of the petitions from the fleet in 1797 suggests that the services of the jaw breaking chaps were made use of by the

lower deck, it was, nevertheless, the thoroughbred tars who were at the back of the mutiny.

Naval officers on first joining are generally told that there are three important factors in a seaman's life—pay, food, and leave. In the year 1797 the pay of an able seaman was twenty-four shillings a month and that of an ordinary seamen nineteen shillings a month, but this pay was often heavily in arrears. The men complained that these rates of pay had been fixed in the reign of Charles II when, so they stated, the cost of living was 30 per cent. lower than in 1797. There is certainly evidence to show that there had been a gradual increase in the cost of living during the preceding one hundred years, and it is highly probable that, during the Napoleonic wars and at the period in question, the cost of living had risen substantially. The men also complained that the pay of the army and militia had been augmented recently but these increases had not been extended to men serving in the fleet, and that whilst the " out pensioner " of Chelsea received £13 per annum the seaman " out pensioner " of Greenwich was only given £7.

Turning next to victuals, it is interesting to note that Pepys recognized the importance of food. He said, " Englishmen and more especially seamen, love their bellies above everything else and further it must always be remembered in the management of the victualling of ships that to make any abatement from them in the quality and agreeableness of the victuals is to discourage and provoke them in their tenderest point and will soon render them disgusted with the King's service more than any other hardship that can be put upon them."

It is unquestionably the fact that the quality of the food supplied was deplorably bad. We read of putrid salt beef, and of salt pork which was " neither fish nor flesh but savoured of both " ; and that the biscuit was invariably alive with maggots. We read of occasions when the men wrecked the houses of the food contractors who were responsible for poisoning and starving them with provisions unfit for human consumption. Braithwaite, a XVIIth century writer, said of the seaman, " he hath an invincible stomach which ostridge-like could well neare digest iron." I hope that, for their sakes, the XVIIIth century seamen shared this invincibility. The only article of diet which received little criticism was the pea soup. Apparently even a contractor, purser, or ship's cook found it difficult to spoil pea soup. Fresh meat and vegetables were not issued regularly in harbour, and although some Flag Officers and Captains were at pains to secure fresh food for their men, others were not equally attentive in this respect.

Many writers state that the men were entirely in the hands of the pursers, who fleeced them at their will. In any case the purser was authorised to appropriate an eighth of all issued rations as his perquisite, and the sailors' pound was therefore fourteen and not sixteen ounces.

Leave was seldom granted to men in harbour, chiefly on account of the desertions which accompanied the exercise of this privilege. Having regard to the crowded state of ships in those days and the conditions between decks, this deprivation must have been felt severely. The atmosphere between decks was occasionally remarked on by seamen writers, but was almost invariably referred to by landsmen visiting the ships. It must have been a combination of bilges and body odour, of which the former undoubtedly ranked highest. The ships were ballasted with shingle or small stone ballast and the arrangements for pumping dry and ventilating the bilges were faulty to a degree. In certain foreign navies there was a pleasant habit of burying men killed in action in the ballast until such time as they could be buried on shore, but although this custom did not obtain in British ships, it is quite clear that the bilges very soon became foul to a degree, and the odour of bilge water impregnated the ship throughout. It was not the custom to wash in those days either ashore or afloat, and we read of gentlemen and ladies of fashion preferring to scent themselves heavily rather than indulge in the alternative protection of having what sailors describe as a nice rinse, or a wash all over. Sir Gilbert Blane, Physician to the Fleet, writing in 1780, states that " a true seaman is always cleanly." He advocates however, " stripping, haircutting, and burning the clothes of all men on first joining," but as the true seamen were not necessarily in the majority, and in view of the limited facilities for washing either the body or clothes, I think it can be assumed that the odour of humanity was fairly pronounced.

Damp was another element of discomfort. The 'tween decks were rarely scrubbed on account of the difficulty of getting them dry afterwards, but leaking seams and gun ports kept the decks and structures damp and gave rise to that musty smell which always accompanies wet wood in confined spaces.

After pay, victuals, and leave, punishment was perhaps the next item in order of importance in a sailor's life. Flogging was universal; the regulations enjoined that this should be restricted to twelve lashes, but this stipulation was rarely observed. As is well known, punishments up to and over seven hundred lashes were occasionally inflicted. Some writers have hinted that men in those days were so tough they

hardly felt a flogging. Mr. Masefield in his book, *Sea Life in Nelson's Time*, quotes the experience of one who was flogged as follows :—

" I felt an astounding sensation between the shoulders under my neck which went to my toe-nails in one direction and my finger-nails in another, and stung me to the heart as if a knife had gone through my body. He came on a second time a few inches lower ; then I thought the former stroke was sweet and agreeable compared with that one. I felt my flesh quiver and every nerve from the scalp of my head to my toe-nails." The rest of the description of this unfortunate man's experience had better be omitted, but it is abundantly clear that there was no relaxation in the agony inflicted by subsequent strokes of the cat.

Strangely enough, the men did not appear to object to flogging as a punishment, but only to the abuse of this punishment ; that is to say, they objected to being flogged for no sufficient reason or given an unreasonably severe punishment for a minor offence.

In addition to flogging there was " starting," which consisted of a man being beaten about the head, shoulders and arms, with a heavy knotted rope, cane or other weapon. On occasion this punishment inflicted even more serious injuries than flogging. Another punishment, that of riding a gun, if continued for a long period, caused a man intense pain. Ducking and keel hauling had then gone out of fashion though still practised in foreign navies.

The discipline maintained by these punishments was severe in some respects, yet lax in others. The large issue of intoxicating liquor, namely one gallon of beer per man per day or, if no beer was available, a quarter of a pint of spirits, was responsible for a good deal of drunkenness and consequent disorder below decks. This was aggravated by the presence of women on board, and it would be fair to say that, however taut the discipline on the upper deck may have been, the discipline on the lower deck was very lax judged by modern standards. The beer or spirit ration was, however, highly prized by the men. Barnaby Slush, the sea-cook pamphleteer, said " liquor is the very cement that keeps the mariner's body and soul together."

The treatment of the sick and wounded left a great deal to be desired. Not only did these men receive no pay until they were again fit for duty, but there were complaints that the surgeons neglected their charges and appropriated the special food and comforts provided for the sick.

Finally there was the relationship between officers and men. The mutinies in the " Bounty," " Hermione," and other ships, and the forced landing of certain officers from the fleet at Spithead and The Nore,

have given rise to an impression that the majority of the officers were inhuman and treated their men brutally. There were certainly outstanding tyrants who formed the subject of specific petitions on the part of the men, but personally I do not feel inclined to accept the suggestion made by the authors of *The Floating Republic* that a majority of the officers were in this category and that their conduct was responsible to a large degree for the mutiny. The complaint made by the men was not that they were normally commanded by tyrants, but that, if they found themselves shipmates with some inhuman taskmaster, representations on the subject merited proper consideration by the authorities.

These were some of the conditions under which the men served in 1797. The Petition sent by the seamen of the Channel Fleet at Spithead to the Admiralty shows to which of these conditions exception was chiefly taken. The following requests were made :

An increase of Pay.

That full weight, *i.e.*, sixteen ounces to the pound, and better quality provisions be supplied. Fresh meat and vegetables instead of flour to be supplied when ships were in port.

Better attention to be given to the sick and necessities for the sick should not be embezzled.

Leave to be granted in port.

Wounded men to continue to receive pay ; and that grievances of individual ships may be redressed.

The actual events of the mutiny and the public reactions to it are of particular interest when compared with the Invergordon Mutiny in 1931, with which I shall deal later. The mutiny broke out on the 16th April, 1797, on the Channel Fleet being ordered to sea. It was known that disaffection existed in this fleet, and Lord Bridport who was in command was averse to it being ordered to sea until the grievances of the men had been adjusted. On the 23rd April the First Lord and other members of the Board of Admiralty visited Portsmouth and undertook to redress certain of the grievances represented ; the King issued a proclamation of pardon to all those concerned in the outbreak and the men returned to duty. Owing to administrative delays, however, sanction for the promised increases in pay and provisions could not be obtained immediately. This caused a second outbreak to occur on the 7th May, which was somewhat aggravated by the fact that, on the 1st May, the Admiralty had issued orders to Commanding Officers to tauten up discipline with a view to preventing any further outbreaks, and a copy of these orders had been seized by the men. This second outbreak was not quelled until, in accordance with the demands of the men, the increases in pay and provisions were passed by Parliament

and a fresh pardon issued by the King. On the 16th May the mutiny was practically over and the Channel Fleet put to sea on the 17th May.

If the view taken by the authors of *The Floating Republic* is accepted, public sympathy was with the men. This may have been the case subsequently, but in those days news travelled slowly and it seems probable that during the time the Channel Fleet was in a state of mutiny only a very small part of the public was aware of what was happening. To those on the southern and south-eastern seaboard, and to those in touch with current events, the danger of invasion must have been the primary preoccupation. It is true that the men of the Channel Fleet frequently affirmed their readiness to engage the enemy should he attempt a descent on our coasts, but a fleet in a state of mutiny was hardly likely to prove an effective line of defence. The subsequent action of the men in Admiral Duncan's Fleet, who deserted their Admiral in the face of the enemy—the Dutch Fleet standing by in the Texel, suggests that there was good reason for alarm and that apprehension rather than sympathy must have been uppermost in the public mind at the time.

It may be said, however, that the men of the Channel Fleet had taken steps to bring their grievances to the notice of the authorities and had grounds for believing that their representations had been ignored. It is of interest to note that the men themselves did not refer to this outbreak as a mutiny but as a " combination " to secure redress of grievances. There is a reluctance on the part of seamen willingly to admit participation in mutiny. Not only does mutiny involve heavy and perhaps capital penalties, but a ship in a state of mutiny is a ship discredited, and a seaman is as jealous of the good name of his ship as a virtuous woman is of her character.

I do not propose to deal with the Nore Mutiny. It had a distinctly political bias and organization, and it was controlled and conducted by men who, I suggest, were not truly representative of the lower deck of the time. It was also sustained unduly by coercion and terminated, not as the result of concessions, but because the men realized that public opinion was against them.

As a result of the representations made by the men at Spithead, an Act dated 9th May, 1797, which merely carried out the terms of the Order-in-Council, gave the following monthly increases in pay:— Petty Officers and Able Seamen, 5s. 6d.; Ordinary Seamen, 4s. 6d.; Landsmen, 3s. 6d. The Act also provided for full allowance of provisions " without any deductions for shrinkage or waste," and for men wounded in action to " receive the full amount of their wages and allowances until their wounds shall be healed or until being declared

incurable they shall receive a pension from the Chest at Chatham or be admitted into the Royal Hospital at Greenwich."

THE 1852 MANNING COMMITEE

I shall now pass to the year 1852 because it was then that the Admiralty appointed a committee to consider and report on the possibility of establishing continuous service in the Navy.

Prior to that date a good deal had been done to improve conditions on the Lower Deck. Time does not permit me to deal with this in detail, but it is worth noting that, in 1806, Able and Ordinary Seamen received an increase in pay ; in 1825 an Act was passed to ensure more prompt payment of wages ; in 1834 a revision of the previous inequitable distribution of prize money was approved ; and in 1835 an Act was passed to limit impressment to five years.

The 1852 Manning Committee sat under the presidency of Rear-Admiral Arthur Fanshawe, C.B. The two main questions under consideration were :

(i) The possibility of establishing continuous service ;
(ii) What measures could be put into force to obtain the requisite body of seamen on mobilization.

It should be noted that the number of officers and men then serving in the fleet was 45,500, of which 12,500 were Royal Marines.

The Committee called before them numerous witnesses, both officers and men, and the recorded evidence throws some light on lower deck conditions at that time. Although since there had been no war or national emergency, impressment had not been necessary for many years, the majority of senior officers examined appeared to be convinced that, in the event of mobilization, impressment was essential. Admiral Sir Byam Martin, a good old sea-dog who informed the Committee that he had been connected with the Navy for seventy years, stated that " the power of impressment must unquestionably be maintained and, I fear, must be resorted to for any sudden armament." He did not like impressment, since he referred to it as a duty " odious in name and disgusting in practice." He justified it, however, in the following terms :—" Demagogues treat it as an outrageous trespass on the liberties of the people " ; but they did not appreciate that it had its " justification in the prompt protection that it enables the fleet to give our country." Admiral Martin did not consider that impressment caused dissatisfaction on the lower deck, and referred to the fact that no mention of impressment was made in the 1797 Petitions. He also referred to Mr. Cobbett's remarks in 1803 on impressment, to the

effect that men in the Navy received a bounty if impressed, pay nearly as good as merchant seamen, better provisions and accommodation than the latter, and an opportunity to earn prize money; and that, although subject to the chance of death or wounding in action, they enjoyed far better prospects of not being shipwrecked. Some of the answers given by the witnesses under examination appear to be a trifle irrelevant: for example, Rear-Admiral Sir Charles Napier, on being asked "Are there any points in naval discipline which, according to your view, might be advantageously amended?" includes the following in his reply:—

> "Rewards should be given for hitting targets;
> Pakenham's plan, or some other, for making lower yards out of small spars should be supplied;
> Improvements in stern and poop lanterns;
> Folding doors for Admiral's cabin—very grand but bad when the ship works."

A large majority of officers and men considered that the existing system of entering men for the commission only was wasteful and inflicted hardship on them. When a ship paid off the men were averse to signing on in the flagship—that is the vessel in the home manning port which carried out what we should now term "depot duties," since by so doing they rendered themselves liable for general service and were unable to select their next ship. An outstanding feature of the evidence is the insistence which the man laid on this privilege of serving in a particular ship. I imagine that this was, to some extent, a relic of the old days when a man had to be very careful before he committed himself to serving in a ship that the Captain was one who would treat his men humanely and fairly; but it may have been occasioned by the desire of men to continue to serve with former shipmates.

As a result of men terminating their engagements on the ship paying off, many found, after their money was spent, that they were unable to find a ship due to commission, and drifted into the merchant service or into foreign navies. An able seaman, named John Lewis, giving evidence, stated that he deserted from a British ship at Montevideo and joined the U.S.S. "St. Louis"; her complement was 210, and though the officers were all American, there were only ten American seamen on the lower deck, the remainder being British, of which a large number were ex-men-of-war's men. Of another U.S. frigate, the "Congress," he said that practically the whole crew was British, and the pay was much better than in the British Navy, being twelve dollars a month for an able seaman. Lewis stated that the duty was

rigorous,—there was much flogging before its abolition in the year 1851, but the abolition of flogging was not approved of by the good men. He also said that the midshipmen frequently struck and kicked the men, that, generally speaking, punishments were very severe in the United States navy and that the English were not satisfied with the American service, but were attracted by the higher wages. Lewis also referred to the constant fights which took place on the lower decks of American ships between the Irish and British seamen.

With a view to reducing requirements of continuous service seamen, proposals were made that the proportion of Royal Marines to seamen, which at that time stood at between a quarter and a third of the total naval forces, should be increased. This was strongly opposed on the grounds that marines could not work aloft and that the number of seamen carried was the minimum required to work the ship. Members of the committee closely examined sea officers on this point and suggested that the Navy was reluctant to introduce labour saving devices. There were hot arguments on the merits and demerits of patent sheaves for blocks and patent trusses for lower yards. Eventually the sea officers had to admit that there had been no substantial alteration or improvement in rig since Nelson's days, and that, in particular, the serving and laying of the guns was practically identical. This is perhaps not altogether surprising when we find that one of the witnesses examined, namely Captain Sir Thomas Hastings, admitted to having been in command of the "Excellent" for fourteen years and that he was succeeded by Captain Chads, who had already held the command for seven years. So placid a conservatism in gunnery matters will, I am sure, appeal strongly to all of us here to-day who are not, and never have been, Gunnery Officers!

Reference is made in the evidence to the messing of petty officers. It was not the general custom apparently for petty officers to mess together. Mr. James Carr, Boatswain, in his evidence stated that "in the "Wellesley," petty officers requested that they might mess with the ship's company"; and that "petty officers do not agree when they mess with one another." From the evidence of other witnesses, it appears that the chief objection of the petty officers to messing together was that they were not provided with any mess boys and had to do their own fetching and carrying, whereas in a broadside mess a petty officer would be the senior hand and would be exempt from mess duties of a menial character. In many ships, however, it was a practice for the petty officers to sleep together in a place set apart for them and screened off with canvas from the remainder of the lower deck.

There are a good many references in the evidence to the reduction in the rum ration from a quarter to an eighth of a pint which took place in January, 1851. Although a few old salts expressed their disapproval of this innovation in no unmeasured terms, other men examined frankly admitted that this had been beneficial . Mr. Carr informed the Committee that the first night of the rum reduction was the quietest one he ever remembers in the " Melbourne," whilst a seaman stated " You can now come upon the forecastle of a ship without fear of being knocked down."

Few grievances of any real importance appear to have been brought to light by the Committee other than those connected with delays in savings banks owing to regulations which insisted on the appearance at the bank of the party depositing or withdrawing money. The men also expressed a dislike to the continuous and excessive sail drill, but stated they did not object to gun drill, which they regarded as work of a constructive character with a definite object in view.

The Committee drew special attention to the great benefits derived by the seamen from the formation of Sailors' Homes, and strongly recommended their extension to as many ports as possible. Referring to these homes, a witness stated that " even if full, the men now prefer to sleep on the floors of the homes rather than return to their old haunts."

Other points of interest in the Committee's report are references to the need for additional recruiting facilities in Scotland, the small average physique of Greenwich schoolboys and the extra work caused by dilution of ships' companies with untrained men.

The Committee reported that they came " unanimously to the conclusion that the time has arrived for placing Her Majesty's Navy on a more permanent basis, upon a similar principle to that established in the Army and Marines ; and that solid advantages both to the Crown and to the seamen will result thereform. In carrying out this measure we are very desirous that it should be effected wholly by voluntary service." The Committee did not advocate compelling men at present serving to change over to continuous service but considered that all boys recruited in future should be entered definitely for ten years' service to count from the age of eighteen. They also proposed that facilities should be given to men serving to enter for continuous service, and that after a man's period had expired he should be permitted to re-engage for further periods of five years, with graduated pension, up to a maximum of twenty years man's service. They suggested various means whereby the fleet should be manned in the event of an emergency, but were unable to suggest any entirely satisfactory solution of this

difficulty as an alternative to impressment. They proposed, however, that pensioners should be liable to service if required.

Among other improvements advocated by the Committee was the institution of the rates of Leading Seaman and Chief Petty Officer. Among the petty officers selected for this higher advancement was the Admiral's coxswain, and from that day it has always been the custom for Admiral's coxswains to receive the acting rate of Chief Petty Officer if not already holding it. An Order in Council dated 1st April, 1852, brought into effect the majority of the recommendations made by the Committee.

THE 1858 ROYAL COMMISSION

The Crimean War, which broke out in 1854 and lasted until 1856, involved a substantial increase in the Navy, numbers rising to 60,000 seamen and 16,000 Marines in 1856. All these men were obtained by voluntary means and no form of impressment or ballot was employed. Considerable delay occurred, however, in completing the complements of ships specially commissioned. As the manning of the fleet still gave rise to some concern, a Royal Commission was appointed in 1858 " to enquire into the best means of manning the Navy." This Commission was presided over by the Earl of Hardwicke and the evidence before the Commission throws further light on lower deck conditions.

The Commission took note of the recommendations made by the 1852 Committee and that these recommendations, although not carried into full effect, had achieved results which showed that the " ordinary peace establishment of the Navy could be maintained by voluntary recruitment at whatever constant force may be determined by Her Majesty and Parliament." They concurred in the views expressed by the 1852 Committee that boys are the best recruits for continuous service, and advocated a training ship being established at Plymouth and other means being taken to provide additional accommodation for training boys, since at that time the number of boys entered annually was restricted to 500 owing to lack of training accommodation. They proposed that a reserve of seamen should be maintained at home ports to complete complements of ships fitting out, and that at least 25 per cent. of such men should be trained for seamen gunners.

After hearing the evidence of a number of witnesses, both officers and men, the Commission was satisfied that there was no undue severity in the Navy. On the other hand there was considerable evidence to show that the Navy was not popular with the seamen of this country as a whole, and the Commission was at some pains to discover what

conditions or aspects of naval service accounted for this unpopularity. It appeared that the fear of flogging and the infliction of unfair and severe punishments loomed largely in the minds of merchant seamen. Several of the officers examined suggested that this fear might be allayed if the more severe punishments were only inflicted after a trial by a court consisting of three or four of the senior officers in each ship, the Captain having the power to confirm or annul the sentence as requisite. It was suggested that this would establish confidence and men would not suffer from being shipmates with a tyrannical Captain. Sir James Graham, who was First Lord of the Admiralty from 1853 to 1855, was asked for his opinion on the matter and gave the following reply:

> "I am ashamed, in the presence of officers of such rank and experience, to give the opinion of a landsman, but I believe that there must be only one authority on board a ship and that must be a despotic authority, and that authority must be the Captain. Make him as responsible as you please for every abuse, but he must be the sole moving power on board the ship, both for reward and for punishment. I do not think that a divided authority would be consistent either with the happiness or safety of the ship's company."

The Commission accepted this point of view and made no recommendation that any change should be made in regard to the existing authority for awarding punishments.

Certain conditions of the service came in for considerable criticism from the witnesses. Among these were the following:—Complaints were made that conditions on board the hulks, in which ships' companies were lodged whilst their ships were fitting out, left a great deal to be desired and were prejudicial to establishing discipline in a new ship's company. Admiral Sir Charles Napier says of them: "As for the hulks I would burn the whole of them; they are a nuisance; they fill up the harbours; they are nothing but a curse and the men hate and detest them." It was apparently the exception for men to join the hulks with any proper kit. New entries frequently arrived with the clothes they stood up in and were unable to procure a uniform for several weeks, since every man joined in debt. It was stated that the working parties of ships fitting out frequently looked like so many scarecrows. Seamen, picking which ship they should join, invariably fought shy of ships whose working parties presented a poor appearance, since the men without clothes would probably use every endeavour to steal clothes from those more fortunately placed. Boat work in all weathers between the hulks and the dockyard, and the strong tides which run at the naval

ports, caused great hardship and discomfort, especially for those men who had no change of clothes. Ventilation of the hulks was very bad and no window-sashes were fitted to the gun ports. Illumination between decks was so poor that the men had to spend an appreciable part of what money they had in buying candles from the bumboatmen. There were complaints, too, that in the hulks, as in other ships, the Master-at-Arms ran a combined shop and money-lending business on the lower deck, and that men who failed to settle their accounts were penalized by being continually placed on the quarter deck for trivial offences and thereby became marked men in the eyes of the officers. Frequent reference is, however, made to the excellent arrangements in the " Bellerophon " which had been fitted out as a model hulk, and actually had accommodation on board for some of the wives of the men.

The proposal that barracks instead of hulks should be employed to house men fitting out ships appears to have met with little approval, in spite of the fact that the experiment had been tried at Sheerness and it was reported on most favourably by officers from that port.

There was a standing complaint in respect of pensions for Warrant Officers' widows, of which they had been deprived some years previously. Lord Hardwicke suggested that this deprivation was due to a practice having grown up of Warrant Officers, on their deathbeds, marrying young women who consequently drew the pension and were a charge on the public funds for many years. Mr. Howels, Gunner, disputed this and gave as the reason the fact that " improper use had been made of it by Warrant Officers in marrying young women who were not the most chaste characters in the world." Warrant Officers also complained that they had no mess and this occasioned hardship and inconvenience. As to the seamen's wives, Captain Boyd, in his evidence, said that considerable improvements in the domestic affairs of the men could be traced to the abolition of the custom of admitting prostitutes to ships, of sneering at married men, denying their wives access to their ships, and treating them disrespectfully. Under the former conditions, " a sailor fell into the idea that any woman was good enough for his wife."

With regard to the important question of discipline, the chief criticism appears to have been directed towards slackness rather than severity. Mr. Lumb, Gunner, states of discipline " it is not so strict. Since they knocked off with corporal punishment to the extent that they have done, discipline has gone to the dogs." Boatswains objected to the fact that under the regulations they might be held liable to

administer corporal punishment, and that this was not consistent with their status as officers. The Commission questioned the validity of this grievance, suggesting that the Boatswain should be prepared to lead his mates who were responsible for administering punishment, and asked the Boatswains examined what they proposed to do if all the Boatswains' mates refused to flog. The Boatswains replied that in that case they considered the ship would be in a state of mutiny and they would be prepared to flog any and all hands. They thought the Master-at-Arms was the proper person to administer punishment, one officer hinting that the interest this rating took in caning the boys suggested he would not have any marked objection to flogging the men.

There was a well established grievance in respect of the loss of meat occasioned by boiling. Unless the meat after boiling was reduced to 8 oz. in the pound the men had no redress. Provided it reached half weight they were entitled to draw additional meat in respect of weight lost, but should the mess be taking up savings on the meat, i.e. not drawing their full quantity but taking money in lieu, no redress was available for short weight due to boiling.

A number of witnesses compared the lot of a sailor joining the service with that of a soldier. The latter received a bounty and a free uniform, whereas the sailor invariably was in debt from the moment of joining.

Criticisms were made respecting the arrangements in force for recruiting men at the naval ports. It was apparently the custom for a " rendezvous " to be selected, but as no provision was made for hiring suitable quarters, the rendezvous was generally situated at a public-house. In once case at least the rendezvous met with approval, since Captain Harris brings to the notice of the Commission the name of Louisa Wafer, of the Hard, Portsmouth, " who was really of very great service to the Navy ; she entered men for several ships I have commanded and altogether she has obtained for the Navy 26,572 men within the last twelve years without considering the novices. She has always kept a respectable house and has prevented people of bad character entering it. I think that her services are worthy of the notice of the Royal Commission."

The Commission in their final report recommended that there should be increased accommodation provided for training boys ; that hulks should be dispensed with or improved in accordance with the arrangements made in the " Bellerophon " ; that the allowance of bread and meat should be increased ; that free kit and bedding should be supplied

to men on first joining; that payment should be made to the men while the ships were fitting out; that allotments should be restricted to dependents in order to prevent men pledging their pay in advance; and that pensions should be restored to widows of Warrant Officers. They made certain further recommendations with regard to the establishment of a reserve and also recommended that the power of impressment should still be maintained. These recommendations, with the exception of that relating to restriction of allotments, were carried into effect, and the increased entry of boys which took place after 1859 built up the continuous service Navy we know to-day.

A scrutiny of the 1862 Return of Crime and Punishment in the Navy throws some light on the conduct of the men at that time. The return gives the average number of men borne as 54,623 and the percentage of punishment as 182, that is to say the number of punishments inflicted was over 1.75 per man per year. 1,012 men were flogged, receiving a total of 34,692 lashes—approximately 34 lashes per man. Leave-breaking is given as 74 per cent.; drunkenness 19 per cent.; and insubordination 11 per cent. of all the men borne. After 1870 flogging was gradually abolished, and had finally disappeared as a normal punishment by 1881. In this connection, it is of interest to note that offences against discipline dealt with by Court Martial increased from 3.25 per thousand in 1870 to 6.25 per thousand in 1881, but after that fell rapidly and reached a figure of 1.6 per thousand in 1893. One can well believe that many of the older and more conservative officers attributed the rise between 1870 and 1881 as being due to the elimination of flogging, but although this may have had some bearing on the matter, a more probable reason is that this period marked the gradual elimination of men who had not entered as boys, and had not been subjected to the same careful process of selection on recruitment.

It should be noted that in 1862 the first naval prison was opened at Lewes. Prior to this, naval prisoners had been sent to the County and other prisons and served their sentences in company with criminals of all descriptions. As the result of representations that men guilty of offences against discipline, which though serious as such were certainly not criminal offences, should not be treated as ordinary criminals, it was decided that whenever possible naval offenders should be sent to naval prisons and that a certain number of the latter should be established both at home and abroad.

Whilst on this subject of prisons it will be convenient to refer to the introduction of detention in 1911 as an alternative to imprisonment for disciplinary offences. Bodmin—the last of the naval prisons—was closed in 1922, and the only Naval Detention Quarters now in use are

those situated at Portsmouth. Following the policy of civil imprisonment, the aim of detention nowadays is reformation rather than punishment pure and simple. It is found in practice that, if you make a man sound and healthy in body, the chances are he will become sound and healthy in mind and take a proper and reasonable view of the duty he owes to the Service.

PART II. of this lecture, dealing with The Lower Deck in Modern Times, and the Discussion will appear in next quarter's JOURNAL.—EDITOR.

THE HARE, THE TORTOISE AND THE EAGLE

By " SOLAIRE "

IN a leading article written about a month after the beginning of the Italian invasion of Abyssinia, *The Times* commented upon the extreme deliberation with which the Italians were carrying out their advance. Reference was made to the prolonged period of consolidation and reorganization which followed each forward movement, and it was suggested that this was, perhaps, due to a policy of " making campaigning and colonization march in step."

The apparent slowness of movement was compared with the speed of Sir Robert Napier's penetration of the same country in 1868, when, in spite of the slenderness of the material resources and with none of those material aids to mobility which are so much in evidence in the Italian army of to-day, this force of less than fifteen thousand men advanced over four hundred miles in barely two months. Moreover, in 1895, the Italians with an even smaller force conquered the whole of the northern provinces within a month, and later made a further advance of sixty miles in the course of a few days : the credit for this achievement is not in any way lessened by the subsequent disaster which overtook the force and which occurred only as a result of strategical impatience and tactical blundering.

The progress of events in the present campaign seems to be little in keeping with the mercurial temperament of the Italian people and the genius of the Duce for getting things done. The recent supersession of Marshal de Bono by Marshal Badoglio has lent colour to the supposition that the caution of the older man was not finding favour in Rome, and that the appointment to the command in Abyssinia of the Chief of the General Staff, acknowledged to be the soundest strategist in the Italian Army, presaged a more vigorous forward policy.

Yet, so far, there has been no notable departure from the " slow but sure " policy. Indeed, it would seem that the danger of strategical impatience is so inculcated in the minds of the Italian General Staff that it has swung over to the side of an extreme deliberation in the conduct of offensive operations.

The later stages of the late war impressed upon the staffs of all nations the essential need for the most minute preparation before embarking upon any active military operation, and it is possible that the Italians with only a limited, and that not a very happy, experience of colonial warfare are applying the lessons learned on European battlefields too rigidly to the conduct of a war of movement over a wild and primitive terrain. But the basic reason for the slowness of the present advance by their forces lies deeper than a theoretical belief in the need for meticulous preparation. It is inherent in the form and organization of all modern armies. *The Times* leader writer has summed up the situation when he says :—" Another modern handicap on mobility is the tendency of all European armies to increase their own needs. The desire for stronger armament causes a demand for more transport ; the desire for better communications leads to more complex communications ; the desire for superior organization creates an additional organization to deal with the development. In building up its power to overcome the enemy's resistance, an army is apt to set up an internal resistance to its advance. Thus, what has been gained by the advent of mechanized means of movement is largely offset by the growth of impedimenta. It is not a necessary growth, but military evolution has always tended to be a process of accretion, tacking new means on to the old body. The idea of remodelling design is foreign to tradition. And the result to-day is the paradoxical one that armies have become less mobile as their limbs have become more mobile. The hare dons the shell of the tortoise." There we have the case in a nutshell. In fact we seem to be moving in a vicious circle. Let us, therefore, review our own position before it is too late, and realize whither we are being led by modern developments ; otherwise there is a risk that we may find ourselves stuck fast in an entanglement of our own making.

From the point of view of military science the late war was a retarding rather than an advancing influence. Since it was so different from any war that had preceded it, we are inclined to regard it as being typical of modern war and to take too much to heart the lessons to be drawn from it. It is a gibe which is often levelled at the British that they always enter upon a new war primed with the lessons of the war before the last ; but the fault which every civilized nation now appears to be in danger of falling into is to ignore the lessons of every war except the last. The war of 1914–1918, it has been said, was a new pattern war : the advent of mechanization made possible that mobility which would restore open warfare ; the later stages began to show us how to avoid the stalemate of trench warfare and how to retain freedom of action, to secure surprise, and to observe economy of force ; in fact, how to implement all the principles of war which we have been taught

are so essential to success. Therefore, it is argued, mechanization and yet more mechanization must be our watchword: let us salute the nostrils of the God of War with a sweet-smelling savour of carbon-monoxide and he will surely give us the victory.

Thus all our armies are becoming highly mechanized—some to a greater, some to a lesser extent. This is only right: it would be ludicrous for armies to ignore the advantages which motor vehicles of transport or offence confer upon them. But let us beware lest the policy should lead us into the very stalemate which we are studying to avoid. For there is a danger in this mechanization. As *The Times* remarks, "military evolution has always tended to be a process of accretion." The military machine is a much more cumbersome affair now than in the days when Marlborough was able to march his armies across Europe, living on the country and with practically no vulnerable lines of communication to tempt the light forces of the enemy. In his day, nearly every man and horse in the force was a fighting unit which, when the time came, was available to take its place in the battle. Modern armies, on the contrary, are dependent for their fighting power, and for their very existence, on lines of communication of an astounding complexity, the defence of which demands nearly as many men and as complicated an organization as does the field army itself. Huge supply depots and dumps, port facilities, a military railway service, vast mechanical transport trains and their repair depots, necessitate the employment of a very large proportion of the man power of the force.[1] The protection of these links in the chain of supply against attack by land and air forces demands a further considerable call upon the available fighting troops, and yet more depots and machinery for their supply and maintenance. The troops who actually face the enemy in the front line form rather a meagre fraction of the force which we put in the field. As we increase the degree of mechanization of our field army, the complexity of our rear services and the difficulty of the problem of supply increases with it. As the problem of supply becomes more difficult, the lines of communication become more vulnerable and require even more men for their defence. The problem becomes a question of adjusting the balance between the advantages which mechanization confers and the complications which it necessitates.

It may, perhaps, be argued that the L. of C. organization was already very complicated before the advent of mechanization, and that, as soon as it became the practice no longer to live on the country, an army had

[1] A recent special exhibition in the R.U.S. Museum, depicting in miniature "The Mechanized Army of To-day," emphasized the complexity of maintaining such a force in the field.—EDITOR.

to trail behind it a great mass of men and vehicles, the safety of which became almost as serious a preoccupation for the commander as the defeat of the enemy opposing him. Conversely, the possibility of cutting an enemy's lines of communication and so having him at our mercy, has undoubtedly had a great influence upon the art of war, while it has magnified the importance of manœuvre at the expense of shock. The communications of an army of the Wellington or even of the Napier of Magdala type were enormously simpler than would be those of a modern mechanized force, such as the Italian army now operating in Abyssinia. Moreover, a modern army is infinitely more sensitive in its vulnerable tail than the armies of the flesh and blood type of the pre-motor periods. If supplies are delayed, or even cut off for a while, your man and horse can continue to exist somehow, at any rate for short periods, in anything but a complete desert. Your soldier can be put on half rations, your horse likewise, and they can probably find some sort of food and water to tide them over a day or two. Allenby's cavalry in their northward dash through Palestine and Syria in 1918 rode for days ahead of their supplies, their horses living on much reduced forage rations and being watered at almost incredibly long intervals. There is a resiliency in flesh and blood which makes such expedients possible. Not so your mechanical vehicle: however great the emergency, the need for petrol, oil, and water remains constant, and when these are not forthcoming, movement ceases. The mechanized army is utterly dependent upon the security, and not only the security, but the smooth working to an exact time-table, of its supply system. If there should be a hitch, the advance comes to an immediate standstill. The present-day commander, as he advances, must be constantly looking over his shoulder, hypersensitive to any possibility of a raid around his flanks: the sort of raid which will most appeal to a semi-civilized enemy, as the Italians have already found in their African campaign. In a war against an enemy equipped with modern weapons, the very mechanization which makes his own back areas so vulnerable facilitates their attack by the mechanized forces of the enemy: a force of cross-country vehicles could play havoc with communications and be away again unharmed unless very thorough defensive measures had been arranged all along the line.

Nor is that the worst; the huge sprawling depots, the repair organizations, the lagers of mechanical transport vehicles, all give the enemy airmen just the sort of objectives they need. By intensive action against this type of target, they are able to make their most valuable contribution to the attainment of their commander's aim. By intensive bombardment of the L. of C., they can bring an offensive to a standstill as surely as will stubborn fighting upon the ground. So our harassed commander must look, not only to his flanks, but also

overhead. If he is to counter the latter threat successfully, he must ensure that the anti-aircraft defences of his lines of communication are adequate. There must be A.A. guns for their protection, and fighting aeroplanes as well. Such things demand more transport, more specialized supplies, more complications, and more vulnerability. This stage of our military evolution seems to have remained true to type. It has consisted in a mass of accretions : the old body has remained the same, the new means have merely been added to it as a sort of fungoid growth.

Yet it will have been worth the additional complexity and its accompanying responsibilities if our armies have thereby been endowed with a greater speed of movement, an increased flexibility, an enhanced power to seize opportunity and exploit the mistakes and weaknesses of our opponents. That, after all, is the promise which these new means of making war seem to hold out to us. That is the one positive lesson which the late war seems to have left with us. Its negative lessons are many and, it is to be hoped, have been taken to heart. *The Times*, in an extract which we have already quoted, suggests that what has been gained in mobility by mechanization has been largely offset by the growth of impedimenta. Unfortunately, this seems to be only too true. The huge organization for the supply of fuel, the depots for repairs and overhaul, the necessity for the building and maintenance of roads for the use of most types of vehicles, the insuperable dependence of the force upon the mechanical regularity of the whole supply and maintenance system, restrict an army to a particular line of advance, which once embarked upon, cannot be changed without very careful planning and a large expenditure of time. No longer can an army rapidly shift its base and face a threat from a new direction ; it is pinned to the ground like a snake with a broken back ; it is still able to sting with its head, but its power of mobility in any fresh direction is gone. There is no particular disadvantage in this state of affairs if, as in the last European war, the front of the army stretches from sea to Alps and the direction of advance can only be forward. But in a campaign of manœuvre the ability to shift front is an essential need.

In a forward direction, our swift-moving motor vehicles give us an appearance of greater offensive power, and that ability to strike round the flanks of our opponent which, as we have seen, constitutes such a serious threat to a modern mechanized army. But, here too, it seems that the advantages may prove more illusory than real. The prime reason for the employment of mechanized forces is speed : the ability which they give us to bring our forces into action quickly and unexpectedly, and to exploit success by a rapid advance, turning the defeat of the enemy into a rout. Yet, here again, we are up against our

difficulty of supply. A mechanized force is anchored to its lines of communication in a way in which flesh and blood is not. Within the same limits of time it could never carry out the great three hundred and fifty mile dash of Allenby's cavalry, unless it had large supplies of petrol on the line of advance—an unlikely event even in a thoroughly settled country, for a retreating enemy would see to it that all such vital supplies were destroyed as he withdrew. The mechanized force, then, is limited to the radius of action of its vehicles ahead of the most advanced supply depot. To move forward the necessary stocks would take time; for all but very limited operations, considerable workshop facilities would also be essential.

There is, then, a grave danger that in rapidly moving warfare a mechanized force would be frequently brought to a standstill, and compelled to see opportunities slipping away from it, unless the service of supply could advance as rapidly as the fighting units. That is too much to hope for, unless the country over which operations are taking place is most extraordinarily well supplied with railways; even then it may be taken for granted that the enemy would damage them so much as to cause serious delay. In undeveloped country, the difficulty of the problem would be accentuated a hundredfold: though the fighting vehicles may be of cross-country type, the supply vehicles would of necessity need roads to travel on, and these must be laboriously prepared as the line advances. Unlimited labour may make it possible to lay down several miles of road a day, but though this may nearly keep pace with infantry, it is of little value if the characteristics which have led us to adopt mechanization are to be exploited.

Is mechanization on a large scale, then, a blessing or a curse? Can it fulfil the promise which it seemed to hold out to us at the end of the late war? It is suggested that the considerations which have been discussed above seem to show that it cannot. Our hare has donned the shell of the tortoise—but it has failed to imbue itself with the ability which made that creature so famous in the fable—the ability to "get there in the end." Even if it had acquired that attribute, would it be worth while adopting the tortoise's armour; if mechanization does not give us speed, it gives us nothing; the British infantryman can be relied upon to "get there" if it is humanly possible.

What, then, are the alternatives? It has been admitted already that in this mechanical age it is the obvious duty of an army to take advantage of every aid which modern invention can give it. The danger is that we may be allowing our enthusiasm for mechanization to run away with us. The concluding stages of the late war gave us reason to appreciate the value of motorized forces, but we may be too ready to

regard the lessons we learnt then as being of universal application, whereas the conditions were peculiar to the very special circumstances of that war. *The Times* suggests that this is already being brought home to the Italian General Staff, and we shall do well to follow very carefully the progress of the Abyssinian campaign from this point of view. There can be no question that mechanized vehicles have manifest advantages for normal supplies to the fighting line. Equally, there is a strong case for providing fast moving vehicles for carrying troops rapidly to the battlefield and from one section of it to another. Thirdly, the provision of light cross-country vehicles to convey machine guns and bring them into action without delay fulfils an obvious need. In certain circumstances, armoured vehicles can undoubtedly do useful work in reconnaissance, while tanks in support of infantry have their allotted function. In fact, it appears that mechanization has nothing but good to offer us in the way of facilitating the advance of the army at its normal pace, which pace is, ultimately, conditioned by the speed at which the infantry soldier can move. The commander possessing a good organization of mechanical means of movement will have an advantage over one who only has at his disposal a less satisfactory organization, because the former will be able to make his dispositions more rapidly, seize fleeting opportunities more surely, counter enemy blows more easily, and deal with the question of supply which these movements involve with a minimum of dislocation. The danger of mechanization lies in imagining that motor vehicles can increase the speed of advance of the army as a whole and permit of rapid movements of pursuit or surprise for long distances in advance of the main body. In these directions mechanization has nothing to offer. In fact, in these respects our old-fashioned army probably had the advantage. Let us make full use of our new servant, but do not let us put upon it burdens which are too great for it to bear and which, by its fundamental character, it is not qualified to carry.

There remains one form of mechanization to which our restrictions do not apply. To quote *The Times* leader once more :—" the air arm is relatively free from these limitations on action. Although it requires a considerable ground organization and ground protection as its bases are pushed forward, it can operate at such long range that its handicaps may be accounted inconsiderable compared with its inherent advantages." It is suggested that it is by the use of air forces that we shall be able to obtain the real increase in mobility towards which we have been, perhaps rather too hopefully, looking forward as a result of mechanization on the ground. It is a favourite aphorism of the earnest student of war that an aeroplane is merely a long range gun. Is it not equally true that it may be used as a long range mechanized

vehicle shorn of many of its disadvantages and freed from the difficulties of supply which limit its action so seriously? The speed of the aeroplane is so infinitely in excess of that of the fastest type of military vehicle on the ground that it is able to travel farther, to hit more frequently, and therefore harder; moreover, it can replenish with fuel and ammunition from its own home base without any of the special arrangements for supply which have to be made in the case of ground mechanized forces operating at a distance in front of their main body. The Italians, by all the accounts which we receive of their operations, seem to have realized this as a result of their early experience. Their mechanized ground forces are now, apparently, playing a very limited part. Their experience is one which we should take to heart.

In the aeroplane we have the key to the problem of increased mobility; let us use it as it should be used. So far we have visualized it in co-operation with ground forces in much too restricted a manner—observation, photography, battlefield co-operation—in fact merely as an additional means of reconnaissance. We have not awakened to its full potentialities. The Americans with their "pursuit ships" are far ahead of us in this. But it is possible to go still further. Let us exploit all the characteristics of the aeroplane—its long range, which allows it to operate from aerodromes far behind our lines and to penetrate long distances behind the enemy's front; its speed, which enables it to be used at a moment's notice to exploit a particular opportunity or to change rapidly to another objective; its flexibility in the matter of armament, which makes it possible to carry out just the type of attack which the moment requires, whether by bombs—light or heavy, by machine-gun fire, or by putting down smoke to mask an attack; its carrying power, which allows it to succour with supplies an isolated detachment—the full possibilities of which have so far hardly been visualized; and its independence of the terrain over which it operates. If we exploit these advantages to the full, if we use the air weapon with imagination and vision, instead of as a mere observation post, we shall attain the mobility for our armies which ground mechanization can never give us. And what is the maximum degree of mobility of an army—it is the same now as it was in Marlborough's day, and long before him, in Xenophon's, in Alexander's, in Cæsar's day; it is the pace at which an ordinary infantry soldier can advance on foot. It is only the infantryman who can occupy territory and who can make good the ground won. That cannot be done by the tank or the armoured car any more than by the aeroplane. The most these modern inventions can do is to smooth the way for him and ensure that his methodical advance is not checked. He may be held up by the action of the enemy or by the friction and inertia of his own communications; to-day the

armoured car or the tank can assist in overcoming the first of these obstacles, but they add immeasurably to the second. The aeroplane, if given the opportunity and developed on the right lines to suit it to its purpose (and there is no difficulty in developing any sort of aeroplane for almost any purpose), would appear to offer a solution to both these problems.

The prevailing desire to profit by the lessons of the last war is praiseworthy, yet it seems that our brains still move slowly. The motor car has been with us for fifty years, but we have only recently become fully alive to its military possibilities. We began the war of 1914–1918 with an almost entirely unmechanized army; to-day we are in danger of equipping ourselves for the next war without exploiting to the full the possibilities latent in the conquest of the air. Let us take note of the lessons which the Italians are learning for us in Abyssinia and, this time, take two steps forward. Let us make every reasonable use of the advantages which mechanization on the ground has to offer us, but realizing its limitations, let us develop fully the possibilities held out to us by the air. Let our hare not overload itself with the tortoise' shell; but rather, by borrowing the eagle's wings, put the issue of the race beyond all doubt.

A JOURNEY TO SOME PENINSULAR BATTLEFIELDS

By Captain C. R. A. Swynnerton, *p.s.c.*

The North Staffordshire Regiment (The Prince of Wales's).

THE study of war is admittedly incomplete unless the student actually visits the sites of the various battles where the problems confronting the opposing commanders can be studied on the ground, but considerations of public and private finance tend to limit such visits to the battlefields of the Great War in Northern France and Flanders. These battles were fought on an enormous and somewhat cumbersome scale and in view of the modern tendency to reduce the size of armies, either by artificial means such as treaties and conventions, or by reason of the fact that the mechanical developments foreshadow the decay of the conception of the nation in arms, it may be more profitable for the student of military history to study, on the ground, battles fought between the relatively small and mobile armies of the last century. The Peninsular War was rich in such battles and is typical of the political, strategical, and administrative difficulties under which the numerically inferior British armies of the past have nearly always fought and under which, at the inception of a campaign at any rate, they will no doubt be called upon to fight again. Though Spain and Portugal are too far from England for large parties to visit at the public expense, Gibraltar is ideally situated and its location can be fully exploited for the benefit of officers stationed there. In 1931 four tours were organized, two parties proceeding to Portugal via Albuhera and Badajoz and visiting Rolica, Vimiero, Busaco and Torres Vedras, while the itinerary of the other two embraced Baylen, Talavera, Almaraz, Arroyo dos Molinos, Badajoz, Albuhera and Barossa. This article deals with one of the latter tours, but before describing the journey, a word or two about conditions in Spain may not be out of place.

Two methods of travel are available, the train and the motor-car. The former is quicker in getting from place to place, and in view of the distance to be covered has much to recommend it. Travelling by train, however, necessitates the hire of taxicabs at certain places where the battlefields to be visited are at some distance from the towns.

Furthermore, the state of railway development in Spain is still backward and many areas remain unserved. The motor-car on the other hand ties the traveller to no fixed times, allows him to go practically anywhere and enables the tour to be carried out in greater comfort and therefore with greater interest. Moreover, an important point in the general education of the officer, a much better appreciation of the country as a whole and of its inhabitants is obtained from a motor-car than from a railway carriage window. Until the dictatorship of General Primo de Rivera, roads in Spain were crude and in places positively dangerous, so that a long journey by car, even under ideal conditions, was a considerable undertaking and in bad weather was often impracticable. In addition to the extreme roughness of the road surface, many streams remained unbridged and cars had to be ferried across by inadequate means or drawn through fords by oxen at considerable risk. In whatever political light the Spaniards may regard their late dictator, there is no doubt that he improved road communications out of all knowledge, with the result that the main roads are now wide, well metalled and beautifully graded. Every stream and river is securely bridged, corners are marked and direction posts are plentiful. Indeed, such is the grading of the roads that in the whole trip of a thousand miles, it was necessary to change gear only once and that during the ascent of the Cuesta la Reina, where the road from Malaga to Granada rises sharply from sea-level to a height of over three thousand feet. The rainfall being slight, there is no camber, while corners are easy to negotiate owing to efficient banking. The only disconcerting feature of travelling over Spanish roads, after those in England, is that there are no hedges or banks at the sides with the result that the motorist passing along a high embankment or negotiating a hill has not even the illusory comfort of a kerb between him and perdition. Secondary roads are still in a backward state, but important towns, being few and far between, are all served with main roads. Petrol is plentiful and cheap, most villages having at least one pump. Spare parts for Fords, Fiats and one or two other foreign makes can be readily obtained, but English cars are not so fortunate, as either there is no market for them in Spain or else the market has been neglected.

The hotels vary considerably, but contrary perhaps to popular belief, are almost without exception comfortable and clean, while even those in the more obscure villages possess a bath. The inclusive tariff in the excellent first-class hotels in such places as Madrid, Seville and Cadiz is about forty pesetas (roughly £1) a day, while in villages such as Trujillo and Manzanares, it is as low as twelve to fifteen pesetas. The food is good and quite pleasant, though some dishes betray their

Moorish origin by too much oil in their composition. The Patronato Nacional de Tourismo, corresponding to our R.A.C. and A.A., keeps lists of recommended hotels and " postas " (inns), together with their tariffs and the traveller is practically certain of comfortable quarters if he lodges in one of these.

As for the Spaniard himself, he is usually considered to be courteous but austere, with a hereditary dislike for foreigners. This belief is true in regard to his courtesy but otherwise erroneous, especially in the more remote districts where foreigners do not often penetrate. Wherever we went, we were met with kindness and consideration and in some places with considerable enthusiasm. The officer visiting the Peninsular battlefields, some of them well off the beaten track, may therefore rest assured that, although he may be ignorant of Spanish, he will be treated with courtesy and friendliness wherever he goes.

The best time for his trip is either in March when the weather is dry and still cool, or in the autumn before the rains break. Spain in summer is not to be recommended as the country is very hot and presents a depressing picture of illimitable aridity, even the olive groves showing up jaded and dusty.

This particular tour was carried out by nine officers in three Ford cars (the most popular make in Gibraltar), the first day's run ending at Granada. No place of modern historical interest was passed on the way, though the ruined castle of Loja, which according to Baedeker, was taken from the Moors by Ferdinand and Isabella with the aid of " the English archers," is witness of an earlier liberation of Spain with British assistance. A hurried visit to the Alhambra next morning preceded our journey to Manzanares which led us through Baylen, where a historic battle resulting in the surrender of a powerful French column took place in 1808. The details of this battle deserve further study by British officers as it was directly responsible for the French retreat behind the Ebro and for the entirely erroneous belief in Spanish prowess which, with other attendant circumstances, led to Sir John Moore finding himself in the precarious position he did before beginning his retreat. The battle is also noteworthy from the purely academic point of view, for seldom have two opposing commanders committed such gross blunders and never has a General less deserved a great victory than Castaños, the Spaniard, nor another so richly merited disaster as Dupont, the Frenchman. These are strong words, but a critical study of the battle reveals the flagrant violation of every principle of war enunciated in any country. Such a study is of great tutorial value. The action is fully described by Professor Oman, Napier, and General Foy, the last named's account being particularly interesting.

From Manzanares, a small town in the heart of the wine manufacturing district, our road led to Madrid. At this time, the Monarchy was still existing and we were fortunate in seeing, amongst other things, the changing of the guard, each relief consisting of a squadron of cavalry, a battery of artillery and a battalion of infantry, all in full dress. The cavalry were the historic Pavia Hussars, from the battle of that name where the Spaniards defeated the French. The drill and discipline were poor as seen by critical British eyes, but the ceremony was none the less impressive, particularly as every head, without exception, amongst the vast crowd was bared as the colours were carried past.

Our next stop was Talavera on the main road to Portugal. Talavera like most country towns in Spain has an aspect of decayed grandeur suggesting a faded beauty grown wrinkled with age, but maintaining her dignity in pathetic penury. Fine stone houses with the carved coats of arms of forgotten noble families over the doorways are now second-rate shops; everywhere are the reminders of Spain's former greatness and in places even of the Roman occupation. At Talavera, we were fortunate enough to find an old man whose father had fought in the cavalry under Cuesta and who had been wounded at the battle. He was delighted to see us and entertained us by retailing his father's reminiscences, being mostly struck by Cuesta's ferocity in ordering so many of his troops to be executed for cowardice. It was noteworthy, though perhaps natural, that here as in most other places, the Spanish generals were looked upon as the real victors and not Wellington, who was regarded as a mere subordinate. The Casa de Salinas, where Wellington was nearly captured, still stands amidst the olive groves, its turret commanding an extensive view over the flat " mesa." It is difficult without actually visiting the battlefield, to visualize the dominating character and natural strength of the hill which formed the extreme left of the Allied position and which, though not of any appreciable altitude, possesses steep, glacis-like slopes and commands the whole position down to the Tagus. For purposes of comparison, it is interesting to note that a modern brigade would have no difficulty in holding the whole of the Allied position. The steep and rugged character of the banks of the Portina rivulet, opposite the British left, is also of interest; indeed so narrow is the fissure through which the stream flows, that its presence is undetected until one approaches to within some thirty yards of it from the French side. It was here that the troops of the opposing armies quenched their thirst in amicable propinquity during the heat of the day. As Professor Oman points out, the ditch into which the 23rd Light Dragoons fell is now entirely non-existent and it is only after a careful search in the valley to the left of the British position that its probable location can be guessed. No

depression marks its site and there is no break in the uniform level of the ground except for a narrow drain, not a foot deep and less than a foot wide. It is strange that nearly all trace of so formidable an obstacle should have disappeared in so unprogressive a country as Spain, especially as the only habitation in the valley is a miserable farmhouse. A granite obelisk, with a now undecipherable inscription, marks the spot where Wellington stood during the battle and whence he directed the 48th to block the gap caused by the incautious ardour of the Guards.

From Talavera, the road passes the enormous bastioned castle of Oropesa, once the home of the dukes of that name and now rapidly falling into ruin. Its situation on the main avenue of approach to Madrid and its artificial strength, give rise to conjecture as to why it did not figure as the site of some combat in this war. A caretaker is now its sole inmate and three or four of its habitable rooms are to be let for board and lodging. The visitor to Talavera will find it more comfortable spending the night here rather than in the town for the accommodation and surroundings are considerably better.

Almaraz, the site of one of Hill's daring exploits, calls for little comment. Only the foundations of Fort Napoleon remain and the earthworks of Fort Ragusa on the farther bank of the Tagus can still be seen. The descent from the Pass of Mirabete is long and steep, and the country must have presented considerable difficulties to Hill's column. The ancient watch-tower of Mirabete, alluded to by Napier as containing eight guns, is similar to the thousands of old Moorish towers all over Southern Spain and is the only part of the defences of the actual Pass that remains more or less intact.

Trujillo, where we spent the night, was the home of the Pizarro family of conquistadores. It possesses the ruins, in a fair state of preservation, of a fine medieval castle with extensive battlements and a church of considerable antiquity and simplicity wherein are the graves of some of the younger Pizarros. The older houses are of finer architecture and lavishly embellished with stone coats of arms, delicately carved portals to the doors and grotesque gargoyles. Oddly enough, the great equestrian statue, covered in verdigris, of the conqueror of Peru, is not the result of local or national sentiment, but the gift of an American tourist.

Arroyo dos Molinos, the scene of perhaps the most successful minor surprise of any war, is a tiny village tucked away in the folds of the hills and is rather difficult to locate. The line of approach and forming-up place of Hill's men, before delivering their attack, is most marked, though it must be admitted that the driving rain on the morning of the assault must have greatly assisted the complete success of the

daring scheme; for the half-mile or so from the assembly position to the village is devoid of cover. Napier rather gives way to his appreciation of the dramatic when he states that the alarm was given by "British officers galloping down the street." There is only one street and that on a slope; it is so vilely cobbled and in such disrepair that walking a horse through it would present considerable difficulty, and it is not likely to have altered much during the passage of over a century. From Arroyo dos Molinos our road lay through Mérida, which once housed a Roman garrison of a hundred thousand men and was the capital of the flourishing colony of Lusitania. There are extensive remains including the ruins of an aqueduct and a fine bridge over the wide Guadiana, which is still in use for all traffic.

Badajoz, where we stopped two nights, was our first disappointment. The approach is splendid, the walls and outworks are in fine condition and still embrace the whole town. The accommodation is, however, distinctly below standard and after much wandering we put up at a hotel which provided lodging only. Restaurants being decidedly poor, we were thankful to the members of a Spanish club for generously putting their premises, including their dining-room, at our disposal. Imposing as the approach to Badajoz may be, the condition of the actual works as seen from the inside, defies description, though not on account of their grandeur. The sanitary arrangements in the town seemed perfectly normal, yet the battlements of Badajoz would disgrace the meanest Eastern village. This condition of affairs did much to mar our visit. From the outside, the repairs to the breach in the curtain between the bastions of Santa Maria and Trinidad can be readily discerned, and the formidable nature of the task set the attackers in negotiating the ravelins and flooded ditch, under the fire of the bastions, can be well appreciated. It seems strange, however, that the capture of the fortress should have been due to the success of a minor operation. Two divisions were directed to assault the three breaches, which meant that over 5,200 men, or rather more than the total numbers of the French, were crowded into the lanes formed by the outer works, so that their dense columns were terribly raked by the enemy guns. A single brigade, however, affected a lodgment at the San Vincente bastion overlooking the Guadiana and took the gallant defenders in the rear. It would seem that had fewer troops, say one division, been directed upon the breaches and surprise attempts made at escalade at various other points, the fearful slaughter at the breaches would have been avoided and a greater chance of success ensured to the attackers. The relative ease with which the citadel, a far more formidable work than the bastions, was taken and the small difficulty which the San Vincente column encountered seem adequate proof of this contention. On our

second night, we were royally entertained by the Staff of the local newspaper who devoted a column to our activities in their next morning's issue. They produced for our inspection the remains of a Brown Bess lately excavated from the ditch outside the walls, together with a brass button which could still be identified as belonging to the IVth King's Own Royal Regiment, and the plate of a cross-belt inscribed in the middle with the figures XXX. Around these figures were the words " Cambridgeshire Regiment." This is especially interesting in view of the fact that the Cambridgeshire Regiment, as such, no longer exists, the territorial designation of the XXXth Foot having been changed to East Lancashire.

Next morning, we met Colonel Don Daniel Dod of the Spanish General Staff, who accompanied us to Albuhera with an excellent plan of that battle. It is worth quoting Napier's scathing comments on Beresford's conduct of the action. " No General ever gained a great battle with so little increase of military reputation as Marshal Beresford . . . the breath of his own army withered his laurels and his triumph was disputed by the very soldiers who followed his car." This is by no means fair comment, and Napier's assertion that " the neglect of the hill beyond the Albuhera fronting the right of the position, was Beresford's own error and a most serious one " [1] cannot be allowed to pass unchallenged. Napier also criticizes Beresford's occupation of the eastern end of the Albuhera ridge. The topography is not as shown on Napier's map, for the ground on which the Allies took up their position, is a long flat ridge devoid of cover and falling gently down to the Albuhera brook in front, and to the plain on the right. Such accidents of ground as exist on the ridge are mere undulations and can by no flight of the imagination be taken for hills. This assertion is borne out by Oman. Bearing in mind the miserable condition of the Spanish troops, who however fought well on this day, it cannot be denied that Beresford was correct in occupying with his own troops what was in reality the key to the position. Had he occupied the right, and entrusted the defence of the village and ridge above it to the Spaniards, he would have risked being cut off and surrounded, for his line of retreat lay direct upon Badajoz and not by the road to Valverde. Nor is the feature beyond the Albuhera, fronting the right of the Allied position, a distinct hill, for it is the counterpart of the ridge upon which Beresford stood, albeit in echelon, as it were, to the west. It is however well wooded, its olive trees extending far to the south. Had Beresford occupied it, he would have had no observation and no field of fire for guns or infantry ; the enemy could have approached unperceived even

[1] Napier, Book XII, Chap. VII. "Observations."

nearer than they did, and the fighting would have been much more obscure. Furthermore, its occupation would have uncovered the road to Badajoz and to have occupied it partially would have effected nothing beyond dispersing the British force. Hence it would seem that in this particular, the impetuous Beresford has been unjustly condemned. A memorial in the village mentions Castaños—the victor of Baylen—as being in command, while Beresford's name, badly defaced, appears in a very inconspicuous position. In point of fact, Castaños was not even in command of the Spanish troops, who were under Blake, but he, having also an English name, suffered no doubt from the same eclipse as Beresford here or Wellington at Talavera.

Seville, where we passed the night, needs no comment except that it deserves the eulogies it has received. From here we went to Cadiz, passing through Jerez, whence many excellent polo ponies find their way to Gibraltar and where sherry can be tasted at its best. It is the one country town in Spain which looks youthful in spite of the fact that it dates back from the Roman occupation. Cadiz retains its old fortifications, but though a fairly prosperous city, its glory has departed and it seems to be living entirely in the past.

Next morning we visited our last battlefield, Barossa, which is some distance off the road and rather difficult to find. The Chiclana forest, where the French lay in ambush, still exists and the course of Graham's movements can easily be followed on the ground. It is indeed astonishing that even General La Peña could have contemplated a march along the sea-shore to Cadiz, knowing as he did that the French were investing that city, without sending patrols into the woods, to make sure that they were not held in force by the enemy. The complete destruction of the whole of La Peña's force was only averted by the extreme gallantry of the few British battalions and the leadership of their indomitable General. There is now no sign of the sea road by which the force re-entered Cadiz, and the battlefield has to be approached through private property. From Barossa we motored on past Tarifa, an inscription over the old gate characterizing it as " Most Valiant, Loyal and Heroic " and commemorating its capture from the Moors in the twelfth century. Tarifa was the scene of an assault by Soult upon a small British force, but the action was not of any great importance and it was felt that as it lies so near to Gibraltar, anyone particularly interested in the affair could visit it at leisure. Leaving Tarifa, we climbed the slopes behind and catching a glimpse of the Rock through a fold in the hills, dropped gently into Algeciras on the last stage of our journey.

The whole tour lasted ten days, and we covered almost exactly

a thousand miles. Four such trips, two on this and two on the Portugal route were carried out, the average strength of each party being eight officers and the expenses well within the scope of the Training Grant. Apart from the purely educational value of such a tour the military benefit was considerable, especially in view of the contention that in wars of the future, armies being small will look for decisions by generalship rather than by reliance upon numbers. The Peninsular War, where the British Commander successfully opposed a highly trained and numerically superior enemy with a small force, is a valuable field for study of the art of such generalship as practised by a great master.

THE EMPLOYMENT OF ANTI-AIRCRAFT SEARCHLIGHTS

By Lieutenant-Colonel M. F. Grove-White, D.S.O., O.B.E., R.E.

IN the September number of the *Journal of the Royal Engineers* appeared an article by Captain J. H. Boyd, R.E., which gave a very clear account of the history and development of anti-aircraft units in the Corps and, also, indicated the important part which this branch is likely to play in the future. It is difficult to stress the importance of searchlights unduly, for it is very easy to show that the success of operations, and even the very safety of the Army, may well depend on anti-aircraft defence, and this defence, at night, is practically impotent without them. Hence no apology is necessary for approaching another aspect of this subject. The vexed question of the proper employment of lights is, probably, the most important point to be considered and the one about which most officers usually know least. Much, but not all, of the essential information is contained in the various official manuals, but these are not always readily available to officers in non-A.A. units.

The following notes may help to an understanding of this question, but the writer wishes to make it quite clear that the views expressed are his own and not by any means necessarily official.

We know that lights are organized in groups or battalions of several companies, each of the latter consisting, normally, of four sections of six lights. Searchlights, disposed for defence, are usually referred to as a " lay-out." Thus one speaks of a company lay-out or a two-company lay-out, etc.

Lights, in a lay-out, are evenly spaced about two miles apart. In a company this results in three concentric rings of 14, 7 and 3 lights respectively (see Fig. 2). If we attempt to increase this spacing we find, in practice, that lights are not sufficiently thick on the ground to enable us to deal with three or four targets simultaneously or to provide, on high flying targets, the intensity of illumination required by the gunners.

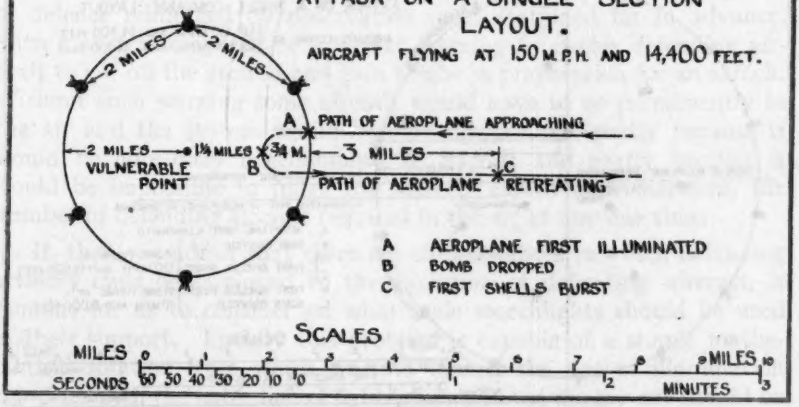
The allotment of lights to any scheme of defence depends on the requirements of the defending air force or anti-aircraft artillery formation, but there are certain facts which influence the decision. Take, for

instance, a single section or 6-light lay-out. The only practicable way of arranging it is in a circle of about two miles radius. This is shown diagrammatically in Fig. 1. Let us suppose that this lay-out is attacked by an aeroplane flying at 150 miles an hour and at 14,400 feet (these figures are selected because they make the resulting sums easier, but they are typical of modern night bombers). In order to hit the target, such an aeroplane will have to drop its bomb about $1\frac{1}{4}$ miles short of it; that is $\frac{3}{4}$ mile within the ring of lights. Now experience shows that such raiding aircraft are usually picked up when immediately over the outer ring of lights.

Figure 1

ATTACK ON A SINGLE SECTION LAYOUT.

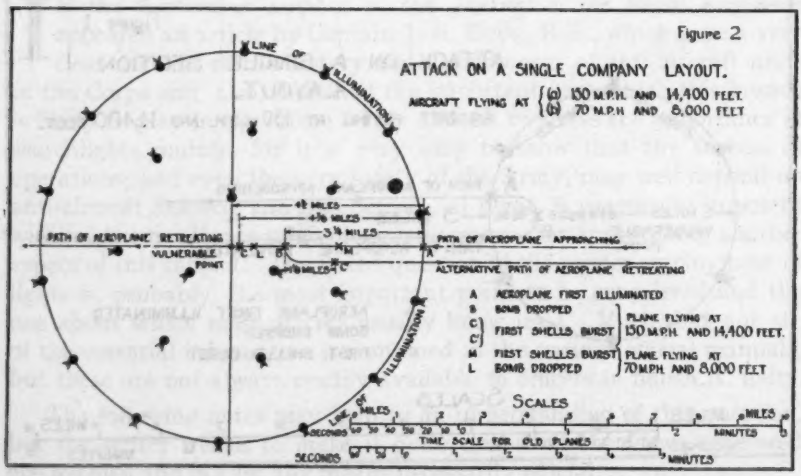
AIRCRAFT FLYING AT 150 M.P.H. AND 14,400 FEET.



Under experimental conditions, of course, and with very highly skilled personnel, much better results can be obtained, but not with personnel of average skill and under the sort of conditions which obtain in war. The aeroplane may be expected to drop its bombs, therefore, $\frac{3}{4}$ mile, or 18 seconds, after it is first illuminated. But to take the heights, set fuzes, lay the guns, and get the shells up to the target takes the gunners about 105 seconds. Hence, if the aeroplane turns on its tracks immediately it has released its bombs, it will be 3 miles outside the ring of lights before the first shells can reach it. If, as soon as it has turned, it puts its nose down and dives, or takes any other means for altering its height, the gunner will never be able to get off an accurate predicted round at all. In this example (which is illustrated in Fig. 1) the vulnerable point has been taken as a literal point. If, as is usual, it is some considerable area, the case will be correspondingly worse. When co-operating with anti-aircraft artillery, therefore, a single-section

lay-out is of no possible use whatever. It merely serves to indicate the target to the enemy.

This is by no means the case if the lights are co-operating with defending aircraft. In this case it is not strictly necessary that the raiding aeroplane should be illuminated at all. An intersection of beams somewhere near the target will usually be sufficient to enable a defending fighter to locate and attack it. Now the range and accuracy of modern lights are quite sufficient to enable such an intersection to be obtained at a distance of 5 miles from the ring of lights, and this allows about 4½ minutes for an attack, which should be ample provided



that the defending aircraft is in the air and at an appropriate height at the moment of the raid.

Fig. 2 shows the corresponding detail for a company lay-out. The results of an attack by an old pattern night bomber (e.g., Vickers Virginia) are shown in this diagram, as well as the results for a modern bomber. It will be seen that the old pattern bomber, which was quite common until a comparatively recent date, would be under fire for about 2 miles or 1¾ minutes before being in a position to drop a bomb whereas a modern bomber would have dropped its bombs 1⅛ miles or some 27 seconds before the first shell could burst. It has been shown above that a bomber, having dropped its bomb, can defeat the A.A. guns by altering its course and height. Hence the single-company lay-out, when co-operating with artillery, though perfectly suitable against the type of bomber which existed a year or two ago, has been rendered

useless by the improvement in the performance of modern night-bombing aircraft.

For the reasons given above, however, and under the same conditions, it is extremely useful for co-operation with defending aircraft. It is capable of indicating the approximate position of hostile aircraft anywhere within a circle of 9½ miles radius from the centre of the vulnerable point or, in other words, over an area of nearly 300 square miles ; and of allowing some 6½ minutes for attack at least.

At this point readers may well ask why defending aircraft are not always used at night in preference to artillery. The answer can be found in the proviso mentioned above, namely, that defending aircraft must be in the air at approximately the right height. This is a perfectly feasible proposition in a situation where there is a fairly large system of defence reinforced by observation posts stationed far in advance. Such a system may ensure sufficient warning to enable defending aircraft to get off the ground and gain height in preparation for an attack. Without such warning some aircraft would have to be permanently in the air and the system would become unworkable, partly because it would be hopelessly uneconomical in aircraft and partly because it would be impossible to judge the scale of attack and, therefore, the number of defending aircraft required in the air at any one time.

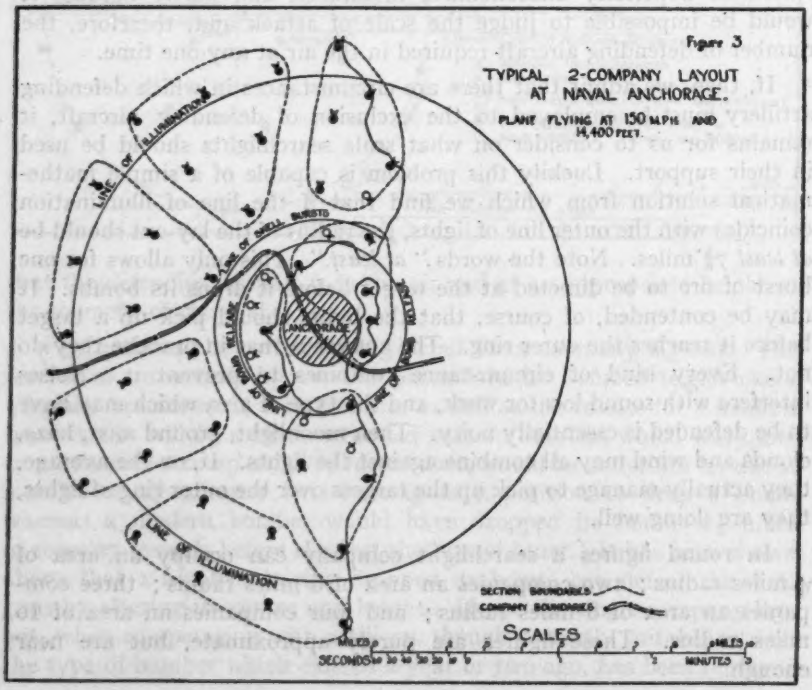
If, then, we admit that there are circumstances in which defending artillery must be employed to the exclusion of defending aircraft, it remains for us to consider on what scale searchlights should be used in their support. Luckily this problem is capable of a simple mathematical solution from which we find that if the line of illumination coincides with the outer line of lights, the radius of the lay-out should be *at least* 7⅝ miles. Note the words "*at least.*" This only allows for one burst of fire to be directed at the target before it drops its bombs. It may be contended, of course, that the lights should pick up a target before it reaches the outer ring. The answer is that in practice they do not. Every kind of circumstance combines to prevent it. Noises interfere with sound locator work, and the type of area which may have to be defended is essentially noisy. Then moonlight, ground mist, haze, clouds and wind may all combine against the lights. If, on the average, they actually manage to pick up the targets over the outer ring of lights, they are doing well.

In round figures a searchlight company can occupy an area of 4 miles radius ; two companies an area of 6 miles radius ; three companies an area of 8 miles radius ; and four companies an area of 10 miles radius. These figures are purely approximate, but are near enough.

Hence a lay-out of three companies, or 72 lights, is the smallest which is of any value when co-operating with anti-aircraft artillery against modern night bombers.

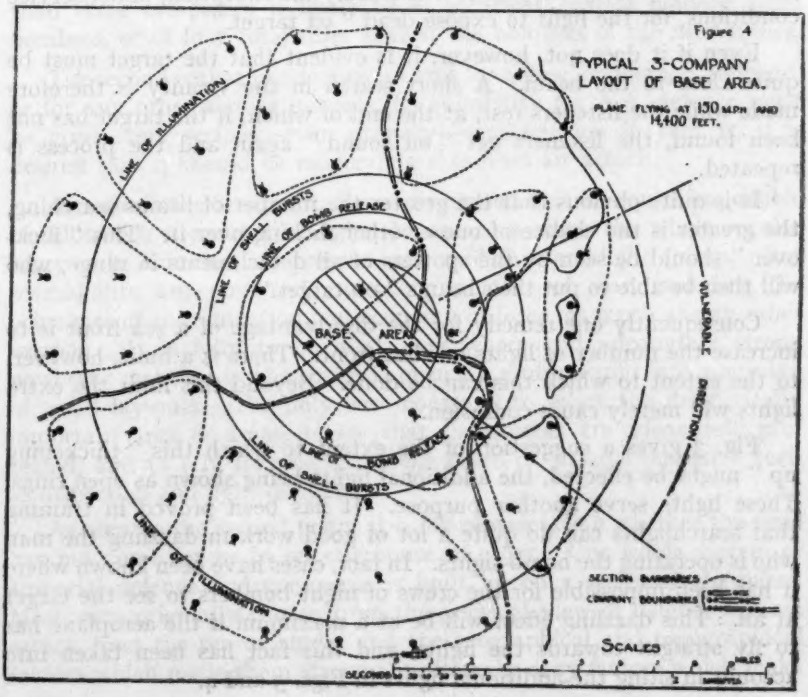
It will be noted that we have been considering aircraft of very moderate speed and ceiling. If we are liable to attack by aircraft of a performance of 200 miles an hour at 20,000 feet, which is quite possible, a four-company or 96-light lay-out will be no more than sufficient. At the risk of being wearisome let us repeat that such a lay-out occupies a circle of 10 miles radius. Hence, in battle, no point nearer to our forward troops than 10 miles can be properly protected at night.

This, however, by no means brings us to the end of the subject. So far we have assumed that our vulnerable point or area is situated in the middle of a large plain and that it is possible to site searchlights at intervals for 10 miles all round it. This is often not the case. It may well be that searchlights will be called upon to co-operate with the R.A.F. or gunners in the defence of a base port or anchorage which is situated on, or very close to, the sea. In this case a circular lay-out may not be possible, since we cannot site lights in the sea. Such situations are illustrated in Figs. 3 and 4. Note that the fact that the



vulnerable area is on the sea does not mean that we can cut off half the number of lights required to defend it and reduce, say, a four-company lay-out to one of two companies. Attack from the sea, in such an example, and especially gliding attack, will be extremely difficult to frustrate, but there are ways in which the danger can be reduced. Consider, for instance, the example given in Fig. 3. If the anchorage was a vulnerable area situated in the middle of the land we should want, normally, about three companies, or 72 lights, to defend it. As half the area is sea it is not safe to say that we can reduce this number to 36. There are the lights actually on or near the half-way line to consider, and, even with normal spacing, we should require about 40. But this number would leave the seaward side intensely vulnerable. How, then, are we to protect it ?

To answer this question we must consider how a target is actually picked up by the beams. Each projector is accompanied by its sound locator and it is quite possible, under peace conditions, to produce listeners who can listen to within 3° of a source of sound, and possibly even more accurately. Take, however, the figure of 3°. This means



that when " on sound " the target may be anywhere within a circle of area $(R \tan 3°)^2$ described about the axis of the sound locator trumpets produced, where R is the range. But the width of the searchlight beam is only about $2\frac{1}{2}°$, which, at the same range, will cover a circle of area $(R \tan 1\frac{1}{4}°)^2$. Hence the area in which, according to the listeners, the aeroplane may be is greater than the area covered by the light in the ratio $\frac{(\tan 3°)^2}{(\tan 1\frac{1}{4}°)^2}$ or in round figures, 6. In other words, if the listeners are normal and every other member of the detachment is doing his job correctly, when the light is exposed there will be something in the order of a 5 to 1 chance against the target being in the beam. But the possibility of error does not end there. The listeners can only point to the past direction of the aircraft. To find the present direction it is necessary to find its course and speed. Course may be determined with a fair degree of accuracy, but speed can only be guessed. There is plenty of chance for error here. One must also consider such factors as distracting noises, sound reflection and refraction, and possible errors in co-ordination between the projector and sound locator. In these circumstances it will be readily imagined that it is decidedly the exception, under service conditions, for the light to expose dead " on target."

Even if it does not, however, it is evident that the target must be quite close to the beam. A short search in the vicinity is therefore made while the listeners rest, at the end of which, if the target has not been found, the listeners get " on sound " again and the process is repeated.

It is quite obvious that the greater the number of beams searching, the greater is the chance of one or other flicking over it. This " flick-over " should be seen by the spotters of all detachments in range, who will then be able to put their beams " on target."

Consequently one remedy for the disadvantage of a sea front is to increase the number of lights on that front. There is a limit, however, to the extent to which this can be done. Beyond this limit the extra lights will merely cause confusion.

Fig. 3 gives a suggestion of the extent to which this " thickening up " might be effected, the additional lights being shown as open rings. These lights serve another purpose. It has been proved in training that searchlights can do quite a lot of good work in dazzling the man who is operating the bomb-sights. In fact, cases have been known where it has been impossible for the crews of night bombers to see the target at all. This dazzling effect will be at a maximum if the aeroplane has to fly straight towards the lights, and this fact has been taken into account in siting the additional lights in Figs. 3 and 4.

Nevertheless, in spite of this, air defence is incomplete and unsatisfactory in both of the cases illustrated in Figs. 3 and 4, but much more so in Fig. 3 than in Fig. 4. In fact, if a base or base port with proper A.A. defence is required it must be carefully selected with that end in view. From the point of view of site, London, Southampton, Glasgow, Cork or Rouen would make very good base ports, as there is room round them for the necessary defences, whereas Dover, Folkestone, Calais, Boulogne or Gibraltar would be very bad.

It may be remarked that no account has been taken of any help which may be given by searchlights mounted on ships. The reason is that accurate sound location on ships is impracticable, at any rate at present, owing to interference by sea and other noises, and that, for that reason, naval searchlight work against aircraft must necessarily be very much less accurate than that of units on land. Searchlights on ships might serve to indicate the ships as targets, and it would probably be wiser to keep them in complete darkness.

So far, then, two facts have been established.

The first is that, when co-operating with artillery, no lay-out of less than three companies is likely to be sufficient against modern night bombers, or of four companies against the bombers of the near future.

The second is that in selecting an area for a base, anchorage, railhead, or for any other similar purpose, its suitability for A.A. defence must be given very serious—even primary—consideration if, that is, it is desired that it should be moderately safe from air attack.

As regards the first point, it may be argued that it is quite impossible to allot such a number of lights to one area when the whole regular army only contains, at present, one mobile searchlight group. But searchlights are governed by the principles of war, including the principles of concentration and economy of force, as much as any other weapon. It is folly to be weak everywhere and adequately strong nowhere ; yet that is what must happen if a group is split into a number of small lay-outs. The only wise course is to select the most vitally important area or areas, to see that these areas are adequately protected, and to rely for protection elsewhere on passive measures such as dispersion and light discipline.

As regards the second point, it is for consideration whether the time has not come for us to set our house in order. Our whole system of Imperial defence and commerce is built up on a series of sea bases. Most were originally chosen from the point of view of defence against attack from the sea or land ; and the geographical and topographical factors which made them strong are often the very factors which make

them particularly vulnerable against attack from the air. Is it really worth while spending money on trying to defend them? Would it not perhaps be better in some cases to cut our losses and go to other places which can be given adequate protection? Here and there, of course, this has already been done. Take Singapore, for example. The old harbour and roads are quite indefensible against air attack. Not so the naval base.

We have already seen that a proper system of A.A. defence must cover an area of some 300 square miles. Yet the areas of Malta, Gibraltar and Aden are only 120, 2 and 80 square miles respectively. Is the air defence of these places really a feasible proposition, and, if not, can we in future consider them seriously as bases?

This, however, is all rather a digression—though possibly an interesting one—since the purpose of this article is to study the correct use of anti-aircraft searchlights. Let us, then, return to the subject.

Having determined the suitability of the site and any special measures necessary consequent on the site, the next point to consider is the scale of attack. If we are dealing with the defence of a position against land attack or of a fortress against attack from the sea, we must take into account not only the class of attack, e.g., by infantry only, by infantry supported by artillery, by tanks, by battleships, by cruisers, etc., but also the quantitative element. Thus the defences necessary to deal with a single battleship will be different from those designed to deal with the whole British Navy. This quantitative element, however, enters far less into schemes of A.A. defence, so far as searchlights are concerned, since mass attack by night-flying aircraft is not very likely. What really matters is the speed and ceiling of the hostile aircraft. For instance, as has been shown, if the enemy's bombers have a performance of about 15,000 feet and 150 miles an hour, we shall want at least three companies or 72 lights. If the performance is in the nature of 20,000 feet and 200 miles an hour we shall want at least four companies, or 96 lights. It will be noticed that the numbers of defending guns do not at this stage come into the picture at all for the following reasons. If adequate protection is to be afforded, an area of a certain radius must be lighted and sufficient guns must then be provided effectively to cover this area. If on the other hand there are insufficient guns or insufficient lights a decision must be made as to which is the most vital part of the vulnerable area and available resources must be utilized to cover that part. To attempt to stretch the anti-aircraft defences to cover the whole area merely means that none of it will be safe. The decision as to the part which is really vital is made by the Commander, and it is the business of the Air Defence Brigade Com-

mander or of the Commander of the Air Defences, in the case of an Air defence formation of a greater or lesser strength than a brigade, to ask for this decision.

It is hoped that it will be realized, from what has already been said, that air defence at night is a question of area defence. There can be, for instance, no question of spreading lights in rows along a road in order to protect it. The correct way of protecting a road must be to defend the defiles on it. Here again dissipation of resources is merely futile.

There is one last point about the employment of searchlights. Everyone knows that passive defence cannot, in the end, succeed. This applies almost equally to air defence. Aircraft, at any rate at present, are not insentient automatons. Their pilots will soon know the location and composition of the defences and will take steps to counter them. They may adopt all kinds of stratagems. For instance, they may attempt to fly over in formations of five or more machines, hoping that the lights will concentrate on one and miss the remainder. They may try sending over several machines simultaneously at different heights in the hope that the lower machine may mask the noise of the remainder ; or, and this is by far the most dangerous manœuvre, they may try to gain a great height and then, throttling down the engines, glide in over the lights. If this is done cleverly, and especially if a machine is kept flying up and down and at full throttle just outside the ring of lights to mask the noise, it will often be extremely difficult to detect the gliders. They are generally audible, but so faintly that they may be unnoticed unless their presence is suspected.

It should be noticed, however, that none of these schemes can be put into effect with a reasonable prospect of success unless the opposing air force knows more or less where to expect the air defences. Hence it must never be allowed to know this important fact.

This involves the use of a reserve which, in principle, is used very much in the same way as any other reserve. For instance, it is suggested that a lay-out, which normally takes three companies or twelve sections to man, should have four companies allotted to it, or sixteen sections, of which three sections of each company would be permanently in action with one in reserve. It is the employment of this reserve section in each company which gives us a chance of defeating the gliding aircraft, and we can do this by creating a mobile edge to the lay-out. Supposing that on the first day we use our reserve section to thicken up the edge of the lay-out ; then on the second day we push this section out in advance ; then on the third day we leave two lights out and pull the rest back. What will happen then ?

On the first night the hostile aircraft will encounter searchlights at their maximum intensity. Then they will know, or will think they know, the position of the outer edge of the lights and will plan their glides accordingly. Consequently they will, in all probability, fly straight over the outer edge of lights on the second night, under the impression that it is four miles further back than it is. Having corrected their impression as to the position of the outer edge, pilots may, on the third night, start gliding accordingly, encouraged thereto by the pair of lights left out in front. In consequence they will have to glide for some eight miles, and will have lost approximately 8000 feet in height, before they reach the real outer edge. All this is not mere theory. It has been tested in practice.

That is the way to use searchlights. Meet cunning with cunning. Never adopt the passive defensive. Try to acquire the complex of the spider, which, having spun its web, waits for the fly to blunder into it.

In conclusion it is worth emphasizing again that, in these days, when co-operating with guns, anything less than a 72-light lay-out is of little value; a single company of 24 lights is nearly hopeless; and a lay-out of 12 or 6 lights is quite useless.

SALVAGE

AN EPISODE FROM THE NEAR EAST

By " DEVONSHIRE "

A SAFE departure from the crowded harbour, where the gale had caused a good many ships to drag their anchors and had put some of them in positions of considerable danger, gave a feeling of relief to all on board. " Lucky to get away with so few bruises " was the general opinion. The Commander might have added " and with so few hawsers," for some had parted under the strains imposed upon them, while others had been left behind, irrecoverable, in the hurried exit to a more healthy area. As a matter of fact only one large steel wire hawser remained on board, though this fact did not cause any anxiety, since the chances of needing it during the next day or two while the ship was riding out the gale comfortably at sea were remote.

Out in the open sea there was the prospect of a quiet night undisturbed by fears of anchors dragging or hawsers parting. But the little cherub who is supposed to sit up aloft and look after the interests of the simple sailor evidently has a sense of humour, though possibly an odd one. At two o'clock next morning, sleep was disturbed by the receipt of an S.O.S. signal from a Greek ship : her boilers were out of action and she was in danger of drifting on to a lee shore in the not too distant future. Her position was " within a hundred miles " of us—always provided that the position given was the correct one.

Increasing speed up to the safe limit in the sea that was running and altering course towards the supposed position of the derelict, we seemed to be heading for an experience that does not often fall to the lot of the naval officer. After following several false trails while we were receiving numerous heart-rending signals from our quarry, we finally sighted her just after daylight, and the job of taking her in tow had to be translated from imagination into fact.

The derelict was living up to her description : her fore-topmast had parted company with the lower-mast and was lying across one side of the bridge ; her ' not under control ' signal was composed of two very antiquated round fenders triced up to the remaining fore stay, and she was rolling heavily with an obvious list. Her crew were nowhere to be seen. Under the existing circumstances communication was

difficult. Her wireless set, which had been worked off a battery, had ceased to function—the battery had given up the unequal struggle after repeated efforts to tell the world of the ship's sorry plight—the wireless operator, although able to transmit morse in English, was unable to take it in when made on a daylight flashing lamp. The ship's capabilities of signalling by means of the International Code were strictly limited, more particularly because the existing edition had no meaning for any one on board and the previous edition apparently carried but little conviction. The only thing appeared to be to do something and hope for the best.

A line was shot by the line-throwing gun, but, as sometimes happens, failed to reach our Greek friend. However, the gesture seemed to be understood by the six men who assembled on the forecastle. Our luck was in, as with the next shot the line fell across her and the crew were able to haul in the various ropes and hawsers of increasing size until, to our relief, we saw our large hemp hawser safely secured over a fairlead on the Greek's forecastle.

While these efforts were being made both ships were rolling heavily, and it was with difficulty that our hawsers were paid out, since very little foothold could be obtained even on our deck and a good many officers and men found themselves thrown from one side of the quarter-deck to the other in their efforts to control the hawsers. After many unsuccessful attempts to tell the Greek to shackle his cable on to our hemp hawser, which in its turn was secured to our one remaining wire hawser, we received a message from him to say that he was ready to be towed. But towing in a sea-way is, up to a point, like the married state in that it must not be taken in hand lightly. It was obvious that in the sea that was running, and with the prospect of the towed ship yawing considerably when being towed in a following sea, every precaution had to be taken to prevent an undue or sudden strain coming on our one and only towing hawser. That the strain would be reduced and anxiety in the towing ship considerably lightened if the Greek would veer the maximum amount of his cable were obvious facts to us if, at the moment, of little import to our friend.

Conversation between deaf-mutes at a distance may be difficult; but conversation between the two ships at this juncture was more than difficult. Personal direction by representatives would have solved the problem, but it was not considered justifiable to risk the lives of men in a boat under the existing weather conditions. To recount the many efforts to translate the hopes of the towing ship into action on board the towee would take an unforgivable time. Every artifice known to signalmen was put to the test. It may have been the threat that the

man-of-war would go home, made by every conceivable combination of International flags, which galvanized the other ship's company into action ; at any rate after two hours of anxious waiting, our hopes were suddenly raised by the emergence of a few links of cable through an aperture on the derelict's forecastle. Advice, suggestions, and threats had borne fruit and, after considerable delay, we saw the cable being veered and only hoped that enough would be paid out to ensure that the hawsers would be kept in the water during the towing operations.

It is better to travel hopefully than to arrive—at least so we are told. Once the tow was finally secured, progress was made with great caution and a good deal of anxiety. The Greek ship in the following sea yawed from side to side, putting a greater strain on the hawsers than was at all welcome. However, all went well, and though the pace was slow it was at least sure.

We arrived off the entrance to the harbour before dusk ; but the local tugs which had been requisitioned could not operate in the heavy sea. The prospect of a further night at sea was not too welcome, but the weather showed signs of improving and it was realized that there was no alternative but to continue the towing operations.

The night had its anxieties even greater than those of the day. Reports from the officer on the quarterdeck that the towing hawser was tending to become horizontal, that the hawser was starting to strand, and that the towed ship was yawing more than ever, caused heart-burnings to which we were already becoming more or less accustomed. But, at last, dawn came, and with it the local tugs. Once again communications were of first importance. Recourse to the International Code gave hopes that our desires would be understood, but such hopes, as we had learnt by bitter experience, were liable to evaporate at any moment. Luckily the master of one of the tugs understood English, and by approaching the Greek ship as close as considerations of safety would allow, his stentorian voice effectively supplemented our signalled directions.

Casting off of the tow was as protracted and stately as had been the shackling on of the cable ; but impatience had by now given place to resignation and we realized that, in this instance at least, " they also serve who only stand and wait."

SOVIET UNION FIELD REGULATIONS

Translated by CAPTAIN D. A. G. BANNERMAN, The Queen's Own Cameron Highlanders.

An article entitled "Soviet Naval Doctrine" which appeared in the JOURNAL *for August, 1935 (p. 607), showed how "Marxian theories" and "revolutionary politics" confused efforts at logical thought on naval warfare. The following extracts from the U.S.S.R. Field Regulations of 1929 show that the same muddled mentality permeated military doctrine, at any rate up to that year.*

In so far as the Regulations lay stress on the importance of political propaganda in war for the "home front" they are sound enough and show that the lesson of Russia's collapse in 1917 has not been lost on the new régime. But when they require a commander to consult his "political detachments" before arriving at a military decision, the Regulations would seem to be sowing the seeds of disaster similar to that which attended the intrusion of "political detachments" into the military command of the French Revolutionary Armies at the end of the XVIIIth Century.—EDITOR.

ORDER BY THE REVOLUTIONARY WAR COUNCIL OF THE UNION OF SOCIALIST SOVIET REPUBLICS.—21ST JUNE, 1929. NO. 154.

Moscow.

TO bring into use the "Field Regulations of the Revolutionary Commissariat of the Red Communist Army of Russia." To cancel "Provisional Field Regulations of the Red Communist Army of Russia, Part II, 1925."

Field Regulations contain instructions for the leading and action in battle of units of the army (regiments, divisions, corps.)

The Regulations do not lay down hard and fast rules, and the instructions in them should be applied strictly in accordance with the situation.

Modern warfare demands of the Red Army:—

(*a*) Political education, the basis of a healthy morale in units and a guarantee of the revolutionary staunchness of the army and its soldiers.

(*b*) The effort to concentrate every force and means for a blow in the decisive direction.

(*c*) The construction of a plan of action based on the material available.

(*d*) The strategic and tactical mobility of the troops, the chief quality in an efficient army; every commander in

training his men must pay the strictest attention to teaching them to be mobile and adaptable.

(*e*) A bold and violent attack and skilful manœuvre; the action of the army in the attack must be distinguished by speed, energy, and fearlessness.

(*f*) A stubborn and active defence; flanking movements and penetration by the enemy are countered by energetic and obstinate fire to cover the resolute counter-attacks of the striking groups.

(*g*) Intelligibility and speed in the issue of orders, accuracy in appreciating the problems of battle and an inflexible determination to give effect to decisions once taken.

(*h*) The boldness and resolution of each commander and soldier, based on a lively initiative combined with revolutionary activity and a constant readiness to accept responsibility for a bold decision.

(*i*) Continuous work by the leaders in teaching their men self-reliance, endurance and an unshakeable trust in their weapons.

Chemical warfare units, for whom instructions are contained in Field Regulations, will be included in the Workers' and Peasants' Red Army only if our class enemies use them first.

In carrying out their duties in war, commanders and men—the class-conscious sons of the Workers' and Peasants' State—must remember their responsibility to the workers for the great task entrusted to them of defending the Workers' and Peasants' State.

People's Commissar for Military and Naval Affairs, President of the Revolutionary War Council of the Union of Socialist Soviet Republics.

VOROSHILOFF.

PART I—COMMAND

CHAPTER I.—GENERAL PRINCIPLES

The Red Army is the weapon of the proletariat State—the first fatherland of the workers and the only one in the world. It must secure the independence of the U.S.S.R., and guard it from every attempt by the foes of socialism and of the proletariat revolution, and it must defend the edifice of socialism, the peaceful labour and freedom of the workers and peasants. In protecting the U.S.S.R. it helps in the struggle for freedom of the oppressed masses of workers throughout the world, by the very fact of its existence.

The strength of the Red Army lies in its class-consciousness, its supreme loyalty to communism, its link with and support of the great masses of workers and peasants, its constant readiness for war, its discipline, and its ability to make full use of its weapons for the destruction of the armed forces of the enemies of the Soviet Union.

In protecting the interests of the workers the Red Army must be ready for bold and decisive actions, aimed at the annihilation of the armed forces of its class enemies. These actions, consisting of a series of operations introducing strong armed forces fighting on a wide front—will lead to the defeat of the enemy in a series of battles by independent formations and units.

Battle is the most decisive means of attaining the object of the operations. Battle leads to the defeat and annihilation of the enemy through physical exhaustion or capture, and the seizure or destruction of his technical means of fighting. In addition, by the energetic exploitation of the results of battle, the hostile armies become disorganized and lose their morale.

The object of every battle is the defeat of the enemy, but it is only by a resolute offensive in the decisive direction, crowned by an unceasing pursuit, that the complete destruction of his resources can be obtained.

The Defence cannot destroy the enemy, it can only weaken him. For decisive victory, efforts must be made to conclude a defensive action with a transition at a favourable opportunity to the offensive.

The chief condition for success consists in the tactical unity and political stability of one's own units, the disorganization of the enemy's resources and the attraction to the side of the proletarian revolution of the working-class masses in his armies and of the civil population in the theatre of war. This is attained by unceasing political action, organized and carried out in the army and outside it by the political sections of army units.

Each headquarters, of whatever formation, and all staffs must ensure the necessary conditions for widespread and continuous political work in the Red Communist Army of Russia, and they will put all means necessary for the success of the work of strengthening the efficiency of the army at the disposal of the political organs and the political department.

Success in battle is secured mainly by :—

(*a*) Political preparation and the persistent determination of all ranks, based on the revolutionary will to win.

(*b*) A correct appreciation of the situation and of the strength of the enemy on the immediate front and in depth.

(*c*) A clearly fixed objective and suitable dispositions, based on a careful appreciation of technical resources and numbers, their condition and the situation.

(*d*) Readiness to accept responsibility for bold decisions: the man to blame is not he who, in his efforts to destroy the enemy has suffered failure, but he who through fear of consequences does not, at the critical moment, use all his resources to obtain victory.

(*e*) The training of the army in the use of technical apparatus, and the speedy adoption of new means of warfare, introduced by improvements in or the invention of new apparatus.

(*f*) The careful execution of the duties of reconnaissance, observation, and protection to obtain during battle timely information of changes in the situation.

(*g*) Continuous work behind the front in order to meet the requirements of the troops as to all natures of supplies and to evacuate to the rear the sick and wounded and all material not needed by the troops.

It is not possible to be equally strong everywhere; to be successful one must have decisive superiority over the enemy in the decisive direction by a suitable grouping of one's forces, leaving in places of secondary importance weaker forces, just sufficient to hold the enemy. The enemy is best held by the constant activity of units situated in these secondary positions; by constant activity they can deceive him as to the direction of the main blow and so assist the freedom of action of units in the decisive quarter.

Surprise has an overwhelming effect on the enemy. Every action therefore must be carried out with the greatest secrecy and speed. Speed of action, combined with good organization, is the main guarantee of success in battle. A force which can quickly respond to fresh instructions and changes of situation, which can move quickly after rest, can march, deploy and attack, and pursue at speed, can always count on success.

Surprise can also be obtained by the unexpected use of new weapons and new methods of fighting.

To destroy the enemy it is not sufficient merely to concentrate superior force and material:—

Co-operation of the different arms is essential throughout; they must act in unison, and units working in different sectors must all work in co-operation.

Owing to the power of modern firearms and the depth of positions, a successful attack requires the utmost efforts from units moving up

in depth from the rear and acting in close co-operation with each other, in order to defeat the enemy by attacking his positions in detail. Once success is obtained, it must be exploited till the enemy is utterly annihilated.

The individual efforts of commanders of all ranks and of the rank and file have the most decisive effects, when these are made in furtherance of the common object. A supreme effort of all arms in the pursuit of a beaten enemy until he is utterly destroyed, will prevent him from being able to reorganize for fresh resistance.

Success can be no less decisive, though it may be obtained in a different direction from that anticipated.

In planning a battle, a commander takes into account the nature and capabilities of each arm separately, and employs them in accordance with their nature and capabilities, the nature of the problem and the situation.

Infantry—is the arm on whose success or defeat the result of battle mainly depends. All other arms co-operate with infantry to enable it to carry out its tasks. Infantry can finish a battle by hand to hand fighting, it can pave the way to this by its own fire power, it can seize enemy material and can hold a locality, and can defend it with its own weapons. The foundation of modern infantry action is the combination of movement and striking power with great fire power.

Artillery—through its weight of fire is the most powerful arm in the service. Artillery assists the infantry and cavalry to carry out their tasks with the minimum of loss by inflicting casualties, by destroying or silencing the fire of the enemy both in the open and behind cover, and by its anti-aircraft fire.

Army Cavalry (Strategic), thanks to its great mobility, is most fitted to combine fire with surprise mounted attacks in mass on the flanks and rear of the enemy. The modern weapons of cavalry enable it to undertake attacks and to carry out its task independently. The attack and pursuit by cavalry of disorganized enemy infantry lead to the complete annihilation of the latter.

The primary purpose of cavalry on the establishment of formations is reconnaissance.

Armoured fighting vehicles—support infantry and cavalry and reinforce their fire power, since they are able to come to close quarters with the enemy. The dependence of armoured vehicles and armoured trains on roads and rails in a good state of repair limits their use. Tanks, used in mass, form a most effective means of overcoming the

enemy's fire and of causing him casualties, thanks to their ability to move off roads and to destroy obstacles; they act in conjunction with infantry and cavalry.

Aircraft—assist the army to carry out its tasks by air attacks on the enemy, and protect their own troops from air attacks of the enemy by fighting the enemy air forces; they paralyse the rear areas of the enemy, prevent enemy air reconnaissance, assist the higher command and units by their own reconnaissances, by observing for artillery and by carrying out liaison duties; they carry out independent missions.

Chemical Warfare Units—in modern war form a powerful weapon for destroying and for embarrassing the enemy both in attack and defence; they are an essential part of the army and are organized in special detachments.

Engineers—assist the other arms by constructional work (e.g., the making and repair of roads and bridges, the technical organization of river crossings, camouflage, the carrying out of specially difficult fortifications, etc.) and by demolitions (damage to and destruction of bridges and roads and the construction of other obstacles).

Signals—establish communications and ensure control.

Supply services and various auxiliary services ensure the organization of the regular feeding and provisioning of the army.

Successful leadership in war is achieved:—

(*a*) By the tactical training of units in peace and its perfection in war—its doctrine being understood by each individual and being common to all arms;
(*b*) by a high standard of discipline;
(*c*) by the constant search for information and correct deductions; by decisions taken boldly and unhesitatingly and clearly expressed;
(*d*) by the ability to form an accurate appreciation of the political situation;
(*e*) by the self-reliance of all commanders, by their resolution in performing their tasks, and by their display of initiative in coming to independent decisions;
(*f*) by the co-operation of the military and political departments;
(*g*) by clear and quick work on the part of the staff and the maintenance of unbroken communications;
(*h*) by individual example.

The truest pledge of success lies in an iron will and an inflexible determination to succeed. Where, however, there is a radical and

unexpected change in the situation it may be necessary to change the original objective. In this case, if there is no time or means for communicating with a superior, a commander *must* depart from the intention of his superior and, in co-operation with neighbouring units, *take a bold decision on his own responsibility.*

For a commander to be able to appreciate correctly the political situation in so far as it affects his actions, he must :—

(*a*) be class-conscious and well-grounded politically, so that he can take a practical and actual part in leading and training the men of the Red Army and in their general social and political life.

(*b*) be able, when coming to a decision, to make proper use of the views of the political detachments of the Red Army as to the political situation.

A Commander maintains the efficiency of his unit by ensuring :—

(*a*) the class-consciousness of each individual sub-unit, its constant readiness to sacrifice itself for the Soviet power and communism, its clear appreciation of the objects of the war, its revolutionary will to victory, its hardihood and its tenacity ;

(*b*) direct contact with and influence over his subordinates, internal solidarity, discipline and trust in officers and political leaders ;

(*c*) good organization and skilful leadership in battle ; victory is the surest means of strengthening the efficiency and trust in its commander of a unit ;

(*d*) careful attention to the feeding and resting of his men : he must accumulate supplies before battle and make full use of them in battle.

The chief means of improving discipline are—political work, education, and the development of a sense of revolutionary duty, strict regard for the general turn-out of units, a severe insistence on the proper performance of military duties, and the personal example of the commander and political worker.

A commander must foster by every means in his power the confidence of his subordinates in success, and their energy and good spirits when on duty, and he must develop their initiative and determination. This is as necessary in times of failure as it is in the hour of victory.

A commander must especially foster determination in those who have suffered a defeat, which may be the outcome of the unavoidable misfortunes of war.

THE INTERNATIONAL SITUATION

THE LEAGUE OF NATIONS AND THE ITALO-ABYSSINIAN AFFAIR

WAR between Italy and Abyssinia broke out without any formal declaration on either side, but with an initial act of violence by the Italian Air Force, on 2nd October, 1935.

Five days later, the League Council decided that Italy was the aggressor and that she had resorted to war in disregard of her covenant under Article XII.[1] of the Covenant of the League of Nations. By implication, it followed that Italy had also violated :—

(*a*) The Kellogg-Briand Pact.
(*b*) The Italo-Abyssinian Treaty of 1928.
(*c*) The Tripartite Agreement of 1907 between Britain, France, and Italy.
(*d*) Certain other treaties in which the principles of the above are reaffirmed, notably the Four-Power Arms Treaty between Britain, France, Italy, and Ethiopia (Abyssinia).

Britain had already concentrated a much augmented Mediterranean Fleet in the eastern end of that sea. In due course, our military and air forces in Egypt were also greatly increased. This was done, not merely to safeguard our own interests, but also to give moral and material support to the League in any measures it might deem necessary to take.

" Not a ship, not a machine, not a man has been moved by any other member State." [2]

On 9th October the League Assembly, with three or four dissentients,

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[1] Article XII of the Covenant reads as follows :—

" The members of the League agree that if there should arise between them any dispute likely to lead to a rupture, they will submit the matter either to arbitration or judicial settlement or to enquiry by the Council, and they agree in no case to resort to war until three months after the award by the arbitrators or the judicial decision, or the report by the Council.

In any case, under this Article the award of the arbitrators or the judicial decision shall be made within a reasonable time, and the report of the Council shall be made within six months after the submission of the dispute."

[2] Sir Samuel Hoare in Parliament, 19th December, 1935.

accepted in principle that Sanctions should be applied against Italy under Article XVI.[1]

On 23rd October, Mr. Baldwin stated that it was impossible in the League as it existed to-day " to push Sanctions to the extent which seems to be contemplated in speeches which I remember a year ago from the benches opposite. . . . We have no intention of acting by ourselves. . . . We have never had war in our mind." In other words, Military Sanctions had to be ruled out because, when it came to the point, the League nations were not prepared to combine to use their armed forces to support the Covenant.

Meanwhile Economic (but not oil) and Financial Sanctions have been applied in varying degrees against Italy.

War between Italy and Abyssinia has now been waging for four months and continues unabated. Both countries remain members of the League of Nations.

THE HOARE-LAVAL PEACE PLAN

In November, 1935, the Prime Minister of Belgium suggested that the British and French Governments should, on behalf of the League,

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[1] Article XVI. of the Covenant reads :—

" Should any member of the League resort to war in disregard of its Covenants under Articles XII, XIII, or XV, it shall *ipso facto* be deemed to have committed an act of war against all other members of the League, which hereby undertakes immediately to subject it to the severance of all trade or financial relations, the prohibition of all intercourse between their nationals and the nationals of the Covenant-breaking State, and the prevention of all financial, commercial or personal intercourse between the nationals of the Covenant-breaking State and the nationals of any other State, whether a member of the League or not.

It shall be the duty of the Council in such case to recommend to the several Governments concerned what effective military, naval or air force the members of the League shall severally contribute to the armed forces to be used to protect the Covenants of the League.

The members of the League agree, further, that they will mutually support one another in the financial and economic measures which are taken under this Article, in order to minimise the loss and inconvenience resulting from the above measures, and that they will mutually support one another in resisting any special measures aimed at one of their number by the Covenant-breaking State, and that they will take the necessary steps to afford passage through their territory to the forces of any of the members of the League which are co-operating to protect the Covenants of the League.

Any member of the League which has violated any Covenant of the League may be declared to be no longer a member of the League by a vote of the Council concurred in by the representatives of all the other members of the League represented thereon."

seek a basis for settlement of the Abyssinian-Italian conflict. M. Laval, in his ardent desire for some way out of the *impasse* which would enable France to sustain her role of a sincere supporter of the League and yet regain the much needed friendship of Italy, found a common meeting-ground with the British Foreign Secretary, who, while no less loyal in his adherence to the principles of the Covenant, had acquired a very clear perspective of the realities and perils of the existing situation.

The two statesmen met in Paris on 7th December, and proceeded to work out tentative proposals for a Peace Plan. On 8th December, M. Laval stated that there was no question at present of making these formulæ public; they were to be submitted for the appreciation of the Governments interested and for the decision of the League of Nations. Nevertheless, within twenty-four hours there was serious leakage of the main outlines of the Plan to the French Press, and sufficient became known of its terms to start what was to develop into a veritable uproar both in Britain and in France, but especially in Britain. However, the British Cabinet, on 9th December, approved that the Plan should go forward as proposed, and this decision was made known to Sir George Clerk, British Ambassador in Paris.

These Anglo-French peace proposals were placed in Signor Mussolini's hands on 11th December, and the latter undertook to examine them. In Paris, M. Laval explained them in some detail to the Italian Ambassador and the Ethiopian Minister.

The full text of the Plan was published by the League of Nations on 13th December.

OUTLINE OF THE PROPOSALS

The following is a summary of the proposals for "An Agreed Settlement" of the conflict:—

The Governments of Great Britain and France would recommend the Emperor of Ethiopia to accept certain exchanges of territory with Italy.

Italy would receive Eastern Tigré between the River Gheva on the South and a line running from North to South between Aksum and Adowa.

There would be a rectification of frontiers between the Danakil country and Eritrea to give Abyssinia an outlet to the sea, preferably by the cession of the port of Assab and a strip of territory giving access thereto along the frontier of French Somaliland.

There would also be a rectification of the frontier between Ogaden and Italian Somaliland. This would result in a very large section of that province being ceded to Italy.

The British and French Governments would also endeavour to secure the consent of the Emperor of Abyssinia and approval of the League of Nations to the formation of a large " zone of economic expansion and settlement " to be reserved for Italy in Southern Abyssinia. Although this zone would still form an integral part of Abyssinia, Italy would enjoy exclusive economic rights within it—subject to the acquired rights of natives and foreigners. A complicated system of control within the sovereignty of the Emperor, but under the auspices of the League and with a preponderating Italian share, was proposed for the control of this zone.

The Emperor would be " recommended " by the British and French Governments to " accept " the formation of this zone.

ABYSSINIAN REACTIONS.

Abysinnia reacted violently against these peace proposals, and on 18th December her delegate handed a note to the Secretary-General of the League which accused them of being " a flagrant negation of the terms of the League Covenant." It was pointed out that the League was not competent to recommend the cession of territory or even an exchange of territory, or to compel or advise a State-Member to agree to economic privileges in part of its territory, or to impose any form of foreign control on the internal administration of a State-Member.

In fact, Abyssinia would have nothing to do with such a Peace Plan: that such terms should even be suggested to her seemed to her little short of a betrayal by the League of one of its Member States.

BRITISH REACTIONS.

Publication of the terms of the Hoare-Laval Peace Plan and the Abyssinian appeal against them, produced a storm of indignation in the British Press of all shades, and even the staunchest supporters of the Government in Parliament were shaken by the depth of feeling which had been aroused in their constitutencies.

The Government had only one hope of saving what, at one time, looked rather like becoming a sinking ship, and that was to jettison their Foreign Secretary. On 18th December, Sir Samuel Hoare placed his resignation in the hands of the Prime Minister, who accepted it.

Sir Samuel Hoare's Explanation.

On the 19th December, Sir Samuel made a long and impressive statement in the House in justification of his negotiations with M. Laval. He admitted that he had had two obsessions—to stop a European conflagration, and to prevent an isolated war between Great Britain

and Italy. The situation, he said, had recently become more dangerous on account of the suggested embargo on oil. From all sides they had received reports which no responsible government could ignore, that Italy would regard an oil embargo as an act of war.

We, as a nation, had no fear whatever of any Italian threat. But it seemed to him that an isolated attack of this kind, launched upon one Power without, it might be, the full support of the other Powers, would almost inevitably lead to the dissolution of the League.

He disliked intensely the practice of the Foreign Minister leaving this country and conducting negotiations in a foreign capital, but he was so pressed on all sides that refusal was impossible. It was in an atmosphere of threatened war, yet one in which the Member States were almost universally opposed to military action, that conversations were begun. The question of Oil Sanctions was to come up within five days, but he did not feel justified in proposing any postponement of the embargo unless it could be shown that negotiations had actually started.

Neither M. Laval nor he liked the proposals, but they seemed the only basis upon which there was a remote chance of a peace discussion. It was certainly the minimum basis upon which the French Government were prepared to proceed.

In explaining and defending the terms of the Peace Plan in some detail, Sir Samuel pointed out that there were three classes of proposals: international supervision; territorial exchanges; and opportunities for Italian economic expansion and settlement. The Emperor had accepted them in principle when war threatened; he had also offered to exchange the vast region of Ogaden for an outlet to the sea. It was proposed to substitute for Ogaden a part of the Tigré province now in occupation by the Italians and in which the Abyssinian chieftains appeared to have gone over to their side. This would have meant the evacuation of certain occupied territories, including the sacred town of Aksum. Abyssinia would obtain a wide corridor to the sea with no restriction as to building a railway. The large area in the South, which it had been suggested should be set aside for economic development by Italy, was non-Amharic and a comparatively recent conquest of Abyssinia. Parts of it had been devastated by slave raiding, and slave ownership was prevalent there, as indeed over the whole country.

These proposals were immensely less favourable to Italy than the demands which had been made by Mussolini. He, Sir Samuel, had been terrified with the thought that we might lead Abyssinia on to

think that the League could do more than it can do and that in the end that country might be destroyed as an independent State.

There were only two ways of ending the war—by negotiation or surrender. He believed that when peace came it would be by negotiation and on the basis of the three principles he had stated.

Economic Sanctions had been imposed, but so far they had not brought us into the danger zone. But they were entering a much more dangerous phase. Member States had done their best, but we alone had taken any military precautions. Now that these negotiations had failed we must have something more than general protestations of loyalty to the League.

Without active co-operation, collective security was impossible and the League would dissolve.

The Premier and the League.

Mr. Baldwin, after admitting that the Government had made a mistake in supporting the Hoare-Laval Plan, and saying that the proposals were " absolutely and completely dead," declared that the League of Nations would remain the keystone of British foreign policy. But he added, " If, by adherence to the League of Nations, we find ourselves standing alone to do what ought to be done by everybody, the country will say : this is the last time we will allow a government to commit itself with regard to collective security, because, for all we know, the next time the field may be nearer home than the Mediterranean."

On 22nd December it was announced that Mr. Antony Eden had been appointed Secretary of State for Foreign Affairs.

League Reactions.

Opinion in Geneva seems to have run parallel to that in this country in condemning any idea that the declared " aggressor " should emerge from a conflict with another Member State substantially better off than before. Such a solution could only be regarded as a violation of the whole spirit of the Covenant, it would mean that weak nations could no longer look to the League to protect their interests, and indeed it would imply such failure and impotency that the very existence of the League would be jeopardized.

On 19th December the Committee of Thirteen[1] met and soon

[1]The Committee of Thirteen was originally set up in the Spring of 1935 charged with the preparation of measures to render the Covenant more effective in the organization of collective security. It appears to have become a convenient body to whom awkward questions are referred.

decided that there was no chance of the Council approving the Hoare-Laval proposals. The Soviet and Danish delegates were particularly emphatic in their criticisms. A diplomatically worded resolution was adopted thanking the delegates of Britain and France for their suggestions but, in effect, burying them forthwith and without further ceremony.

FRENCH REACTIONS.

His " partner in crime " having suffered political extinction, attention naturally centred on M. Laval, and it was widely expected that he too would fall from grace, and with him his Government.

In an address to the French Chamber on 27th December, he countered Sir Samuel Hoare's complaint that not a ship, a machine or a man had been moved in support of Britain, by saying that he had not hesitated on behalf of France to enter into an engagement with Britain to afford her assistance on sea, on land, and in the air if she were attacked by Italy on the application of Sanctions.[1]

The object of the League, he said, was to prevent war, to restrict its effect, and not to spread it. In actual practice the League would suffer a check if it refused to take into consideration the limits of its possibilities. Whatever happened he would persevere in a fervent and unflagging endeavour for peace.

Once again this astute lawyer-politician succeeded in preserving the balance between seeming to fail in the support of the League and the danger of offending Italy irretrievably. He carried the Chamber with him sufficiently to secure a vote of confidence by 296 against 276. Nevertheless, on 22nd January, 1936, M. Laval found himself deserted by his Radical supporters and forced to tender the resignation of his Government.

On 24th January a new Government was formed by M. Albert Sarraut with a predominantly Radical ministry. M. Flandin became Foreign Minister. An election is pending at an early date. Meanwhile French foreign policy tends to place Franco-German affairs in the forefront of the picture and to allow the Italo-Abyssinian difficulties to recede somewhat into the background.

ITALIAN REACTIONS

The officially guided Italian Press was not slow to express vehement opposition to the Hoare-Laval proposals. It proclaimed that there was

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[1] French Ministers have on more than one occasion given this assurance; but the fact remains that there have been no strategic movements of naval, military or air forces in readiness to give it effect; nor, without mobilizing, is France in a position to give effective support.

a vast anti-Italian conspiracy by the forces of British Imperialism, anti-Fascism, the Labour Party, anti-Catholicism, Freemasonry, Judaism, and Bolshevism—truly strange bed-fellows! Strong objection was raised to any solution which could conceivably leave the door open to new incidents and anti-Italian intrigues.

Mussolini naturally seized the opportunity afforded him by the divisions at Geneva to heap scorn on his international obstructionists. After a defiant speech on 19th December by the Duce, the Fascist Grand Council met and, on 21st December, their resolution was issued, in which it was stated that, " In face of the confusion and the contradictions in the conduct of the Sanctionist countries, the Italian people remain unshakeably agreed in the strongest defence of their rights. . . ." It was also affirmed that the action of Italy would continue with inflexible decision for the attainment of the goals marked out by the Duce.

THE AFTERMATH.

Sir Samuel Hoare's courageous and plain-spoken statement on his resignation has done much to clarify the outlook on the situation, which had become exceedingly befogged by false idealism, by the endowment of the League of Nations in the minds of well-meaning people with powers which it has never possessed, and by his exposure of the lack of any effective co-operation to apply military pressure on the " aggressor " belligerent.

It will be very interesting to see how the conditions of peace, when it comes—as it must come in the end, compare with the Hoare-Laval Plan. That the proposals had more to commend them than was at first apparent, is now clear. That they were launched without the ground being properly prepared for their dispassionate consideration is equally obvious.

OIL SANCTIONS

If Sir Samuel Hoare's realistic " appreciation of the situation " has done nothing else, it would seem that it has at least caused the League to stay its hand in attempting to apply oil sanctions to Italy. But another reason why this potent influence cannot be brought to bear is that the United States shows little intention of supporting such an embargo, and the League nations certainly have not the remotest intention of using force to prevent American supplies of oil from reaching Italy and her armies in Abyssinia.

A Neutrality Bill was introduced into both Houses at Washington

on 3rd January. Amongst other things, it included provision for " a mandatory embargo on munitions and a permissive embargo on abnormal shipments of commodities usable in war," while it would also preclude the extension of credit to belligerent nations.

But a week later, the Secretary of State approved the Senate Foreign Relations Committee's proposal to eliminate from the Bill the clause which would have empowered the President to prohibit the shipment of articles which could be used for war purposes, whenever he found that " to refrain from . . . such restrictions would contribute to the prolongation or expansion of the war." This clause was criticised on the grounds that, if the League of Nations voted an oil embargo, the United States might be forced to join in this action. It is evident that there is very strong opposition in that country to any line of action which might embroil America in European controversies or conflicts, and an instinctive mistrust of any legislation or negotiations which might savour of the United States being in any way answerable to the League.

Another practical aspect of Oil Sanctions is that Italy probably has enough fuel in reserve to last her until the rainy season in Abyssinia. Only time can show whether it will then be a case of " *après cela le déluge.*"

THE ITALO-ABYSSINIAN WAR

THE following is a diary of the principal events in the Italo-Abyssinian War :—

30th October, 1935.—Ras Seyum avoided battle and retired slowly before the Italian advance in the North. Considerable concentrations of Abyssinian troops reported at Dessie.

3rd November.—Italian forces moved South towards Makale. Heavy rains hampered the operations.

5th November.—General Graziani's forces occupied Gorahi, and Italian troops captured Makale next day.

8th November.—Italians occupied Dolo (seven miles East of Makale) and advanced twelve miles South of Makale.

10th November.—General Graziani's troops took Warandab and Grabrehor.

12th November.—Italians on the northern front occupied Abi Nevrid. Abyssinians claimed capture of four tanks on the Ogaden front.

13th November.—Battle reported near Daggah Bur. Abyssinians claimed 1000 prisoners.

15th November.—Serious fighting reported at Asbi between a Danakil column and Abyssinians under Dedjasmatch Kassa Sebhat.

16th November.—Italians secured fords over Takazze River in Czembela region.

General de Bono recalled. Marshal Badoglio appointed Commander-in-Chief.

17th November.—Daggah Bur bombed by Italian planes.

19th November.—Ras Seyum appeared suddenly with about 20,000 well-armed men in eastern Tembien between the two Italian main lines of advance from Makale and Adowa regions.

21st November.—Abyssinian Emperor paid a personal visit by air to troops at Harrar.

24th November.—Italians announced the surrender of Hussen Haile, Abd-el-Kerim Mahd., son of the Mullah and other chieftains of Ogaden. They also claimed control of the valleys Webbe-Shibeli and Fafan.

25th November.—Abyssinians counter-attacked towards Gorahai.

26th November.—Abyssinians claimed recapture of Gorahai. Italians claimed success near Dolo, on the southern front.

27th November.—Abyssinians announced retreat of Italians in Ogaden and recapture of Gerlogubi. Italian withdrawal reported near Makale.

28th November.—Italian planes bombed Daggah Bur. Abyssinian troops reported moving northwards from Dessie.

29th November.—Abyssinians claimed surprise and rout of 300 Italians near Odobo, in Aussa region.

2nd December.—Abyssinians pronounced Harrar to be an "open town" to avoid air bombing.

5th December.—Italian planes bombed Dessie, where Emperor was staying. Abyssinians admitted 280 killed and wounded. American Red Cross Hospital reported to have been bombed and one nurse wounded; Emperor's local palace partly destroyed.

8th December.—Italians reported capture of Abbi Addi, capital of Tembien.

17th December.—Abyssinians crossed River Takkaze and drove back Italians to Dembeguina Pass. Italians admitted 272 killed. Abyssinians claimed capture of ten tanks and twenty-eight machine guns.

27th December.—Abyssinians counter-attacked North of Makale and claimed capture of eleven machine guns, many tents and mules, stores of equipment and munitions.

28th December.—Abyssinians claimed recapture of Abbi Addi.

31st December.—Italian planes bombed Swedish Red Cross unit near Dolo. Doctors Hylander and Lundstrom wounded and 78 patients and native orderlies killed and wounded.

1st January, 1936.—Italians justified bombing near Dolo as reprisal for alleged decapitation of two Italian airmen captured near Daggah Bur.

4th January.—Italian planes reported to have bombed Egyptian Red Cross camp near Daggah Bur ; no casualties reported.

6th January.—Italians admitted loss of 390 of all ranks killed since 3rd October, 1935.

8th January.—Heavy rains hampered operations on both fronts. Abyssinians reported occupation of Tembien province by Ras Seyum.

10th January.—Abyssinians announced defeat of Italian column in Waki region and capture of six tanks, nine machine guns, and a wireless apparatus.

11th January.—Abyssinians reported to have formed a tank company with twenty-four captured tanks.

12th January.—General Graziani started an attack on Ras Desta's forces, North and North-West of Dolo, on southern front. After three days' fighting, the Italians drove back the Abyssinians and occupied the lower territory between the rivers Ganale-Doria and Dawa. Heavy casualties are reported on both sides.

13th January.—Italians reported repulse of heavy Abyssinian attacks South-East of Makale, and fighting near Aksum.

16th January.—Italian planes bombed an Abyssinian Red Cross unit staffed by British doctors at Waldia, North of Dessie.[1]

18th January.—Rome reported an advance of 120 miles from Dolo, on southern front ; Abyssinian losses estimated 5000 killed ; Italian losses 500, mostly wounded. Ras Desta's forces reported to have been from 15,000–20,000 strong.

THE SECOND LONDON NAVAL CONFERENCE

THE Second Five-Power Naval Conference to be held in London opened on 9th December, 1935. This was convened with the object of drawing up a new agreement on the expiration of those arrived at during the First London Naval Conference in 1930, and at Washington in 1922, and before the end of 1936.

BRITISH PROPOSALS.

Mr. Baldwin, Prime Minister, in opening the Conference, said he would like to see a reduction in the size of all the larger types of ships and of the guns they carry. He still pressed for the abolition of submarines, failing which it was of vital importance to reach an agreement which would prevent their misuse.

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[1] These Red Cross units, which from time to time are reported to have been bombed, appear to be in the nature of advanced clearing stations rather than hospitals.

UNITED STATES' PROPOSALS.

Mr. Norman Davis read a letter, written fourteen months previously, from President Roosevelt in which the latter suggested a proportional reduction of 20 per cent. below the existing tonnage of the British, Japanese, and American navies. Failing this or some less reduction, he proposed the maintenance and extension of existing treaties over as long a period as possible.

Mr. Davis admitted that in the interval the situation had changed considerably; but he advocated that the essential balance between the three Navies should be maintained by mutual agreement and not by extensive competition.

JAPANESE PROPOSALS.

Japan desired to see the abolition of all capital ships, aircraft carriers, and cruisers of the 8-in. gun class; but sought a considerable increase in her submarine strength.

She also wished to establish "a common upper limit of tonnage" for all those classes of warships which would be retained. This, in effect, was a demand for parity with Britain and the United States as regards "global" (total of all classes) tonnage, with freedom to apportion that tonnage to various classes as best suited her.

FRENCH PROPOSALS.

France favours drastic limitation both in maximum tonnage and calibre of guns. But M. Corbin, her spokesman, reverted to her old argument that, as regards quantitative limitation, the problem must be studied in relation to sea, land, and air armaments. He implied that she was not willing to subscribe to the British idea of the total abolition of submarines, but emphasized that his Delegation would support any proposals calculated to humanize methods of naval warfare.

ITALIAN PROPOSALS.

Signor Grandi said that Italy had given eloquent evidence of her desire to limit naval armaments by having refrained from building up to her quota under the Washington Treaty. It was the principal aim of the Italian Delegation to avoid an armament race.

COURSE OF THE CONFERENCE.

With one exception, the proposals of the Five Powers are in time-honoured form: Britain would like somewhat smaller—and therefore cheaper—ships, and more of them; Japan, France, and Italy would probably agree to an all-round reduction of size, but the United States'

naval authorities are obsessed with the notion that the situation in the Pacific demands ships with a great range of action as well as speeds and armaments "second to none," and that these cannot be secured on lower displacements. The ever-recurring proposal to abolish submarines has met with no more support from France and Japan than it did when it was first made: it is regarded as purely self-interested on the part of Britain, and it seems unfortunate that it should be persistently put forward as a sop to sentimentalists in this country, knowing that there is no chance of it being accepted. France, ever with an eye on Germany and *securité*, dislikes these piecemeal discussions on armaments. She wants to be free to counter every move and development of her neighbour whether on land, sea, or in the air—all the more so now that the Treaty of Versailles is fast going by the board. Italy, in effect, re-echoes her prayer for "a navy as strong as France, but let it be a very little one."

The one striking exception in this Conference has been Japan's demand for parity in principle with Britain and the United States. This proposal met with such a frosty reception, especially on the part of the United States' delegates, that to avoid a premature *impasse* on 16th December, it was shelved "for further reflection and examination." But a month later the situation had to be faced that the Japanese Delegation had received imperative orders to adhere to this demand at all costs, as a matter of national prestige.

Lord Monsell, as British First Lord, pointed out that naval equality could not be measured in terms of ships, but questions of bases, supplies, and communications must also be taken into account. A Power with great naval needs could not denude its territories of their essential defences and concentrate its entire fleet in the distant waters of a hypothetical enemy. The British Commonwealth had to take into account responsibilities in European waters, and in the Atlantic, Indian, and Pacific Oceans. Britain agreed with America that "it is impossible to maintain that equal armaments give equal security."

Mr. Norman Davies said that the United States could not consent to any change which would lessen their relative security.

Sir James Parr, speaking for New Zealand, remarked that the Japanese proposal would mean that the protection which the British fleet could give to his country would be almost negligible.

Mr. Bruce, on behalf of Australia, said that he saw in the Japanese proposal neither limitation nor equality of security.

Mr. Dulanty, representing the Irish Free State, supplied an element of, doubtless unconscious, humour. Having remarked at the opening

meeting that Saorstat Eireann had no navy and that the construction of vessels of war did not enter into the plans of his Government, he now put forward an emphatic demand that the Irish Free State should be regarded as a high-contracting Power and should be recognized as such in any agreement reached.

The outcome of this meeting was that Admiral Nagano, head of the Japanese Delegation, addressed a letter to the Vice-President Lord Monsell, intimating that the Japanese had withdrawn from the Conference. This was thereby reduced to a Four-Power status, Japanese representatives remaining as " observers."

Four-Power Talks

The reduced Conference then proceeded to discuss three plans for the exchange of information submitted by the British, French, and Italian delegations, and it was agreed in principle that advance notification of building programmes was a desirable feature of any agreement for limitation of naval armaments. The matter was referred to a sub-committee to draft proposals.

On 30th January, the Chairman having remarked that the Conference had agreed in principle to confine its discussions to practical rather than ideal proposals, and that there was little hope of securing agreement on qualitative limitation on the lines advocated by the British Government, then put forward certain figures as a basis for discussion. This proposal was agreed to by all the Delegates, and it was decided to refer the matter, in the first instance, to a technical committee. The figures are :—

Capital Ships.—35,000 tons and 14-in. guns, with a possible reduction of 2,000 or 3,000 tons in this displacement.

Note.—The existing limitations for this class are 35,000 tons and 16 in. guns . (Washington Treaty.) [1]

Aircraft Carriers.—22,000 tons and 6.1 in. guns.

Note.—The existing limitations for this class are 27,000 tons and 8 in. guns .(Washington Treaty.) [2]

A-Class Cruisers.—No more to be built during the term of the proposed agreement.

Note.—These are vessels of approximately 10,000 tons carrying 8 in. guns.

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[1] H.M.S. " Hood " of 41,200 tons was excepted from this rule.

[2] Each of the Contracting Powers was permitted to build two carriers each of not more than 33,000 tons, hence the " Lexington " and " Saratoga " (U.S.A.) of this displacement.

B-Class Cruisers.—7,500 to 8,000 tons with 6.1 in. guns.

Note.—Within the total quota of cruiser tonnage, "B" Class Cruisers can be and are being built up to 10,000 tons displacement.

Submarines.—2,000 tons and 5.1 in. guns.

Note.—These limitations are the same as those agreed to by all Five Powers at the First London Naval Conference.

It would be premature to remark on the probable outcome of the Conference or its effect on our own Navy. It is obvious that any agreement which is likely to be come to must be far less comprehensive than those which resulted in the Washington and London Treaties. No arrangement for quantative limitations can be satisfactory which does not include Japan. If the Four Powers can agree on qualitative limitations, there can be no doubt but that their example will exert a very considerable and probably a predominating influence on other navies.

But above all else, it is to be devoutly hoped that we shall soon be free to build, and that we shall proceed to build, up to the needs of our own special naval requirements, and that we shall have shaken off, once and for all such fetters as those which were placed on us by the First London Treaty.

CORRESPONDENCE

[*Correspondence is invited on subjects which have been dealt with in the* JOURNAL, *or which are of general interest in the Services. Correspondents are requested to put their views as concisely as possible, but publication of letters will be dependent on the space available in each number of the* JOURNAL.—EDITOR.]

THE FIFTH BATTLE SQUADRON AT JUTLAND

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—In his account of "The Fifth Battle Squadron at Jutland," Vice-Admiral Craig Waller replies[1] to the criticism that "it was unfortunately handled with singularly little enterprise." This remark was made in a review[2] of Mr. Cruttwell's *A History of the Great War*, 1914–18, in connection with that author's criticism of the Commander-in-Chief for not improvizing a harassing movement with this Squadron on the enemy's Western Flank, when the main action was joined. It was prefaced by the statement "The Commander-in-Chief was not in a position to gauge the potentialities of this Squadron. There was nothing to prevent it harassing the enemy, but . . ."

The decision of the Rear-Admiral commanding the 5th B.S. to join up with what was to become the rear of the battle fleet, while the latter was deploying, and not to follow the battle cruisers to the head of the line, was undoubtedly correct. But this was at approximately 6.15 p.m. At 6.35 p.m. the German battle fleet made the first sixteen point turn away to the south-westward under the growing intensity of fire from our battle fleet on the head of its line. The 5th B.S. continued to conform to the deployment, and in order to do so had to stand to the north-eastward until about 6.40 p.m., when it turned, in succession, to the course of the fleet, S.E. by E. From then onwards the 5th B.S. still conformed to the movements of the other battle squadrons, except that at 6.56 p.m., when the course of the fleet was South-East, it turned in succession to East—for what reason is not quite apparent.[3] The effect of this was that when, at 7.12 p.m., the German fleet again blundered into the concentrated fire of the centre divisions of the British battle fleet, the 5th B.S. was on the further (from the enemy) quarter of the "Marlborough's" 1st B.S. Here it remained after the second turn-away of the German fleet until 7.45 p.m., when the two squadrons turned to the southward into line ahead.

The 5th B.S., although reduced to three ships, was still a powerful fighting unit and it had a considerable superiority in speed over that of the rest of the British battle fleet—which, incidentally, was only steaming 17, and later 15, knots during this period of the action, and also over any capital ships of the enemy fleet except, perhaps, one or two of his badly mauled battle cruisers. There could have been little or no danger, therefore, of the Squadron being "cut off," and it is difficult to understand why it should not have pursued a more "enterprising" course by

[1] See the JOURNAL for November, 1935, p. 791.
[2] See the JOURNAL for May, 1935, p. 456.
[3] See Official History of the War, "Naval Operations," Vol. III, Map No. 135.

following the 2nd Light Cruiser Squadron to the south-westward instead of rigidly adhering to the slow pace of the main fleet.

It would have been a very different matter for the leader of a division nearer the centre of the line, whose ships had no superiority over the potential speed of either our own or the enemy's battleships, to have sought to emulate Jervis or Nelson by independent action ; but the 5th B.S. was, both by virtue of speed and position, free to have explored in the direction of the enemy's retirements. No effort was made to do so.

The lack of initiative displayed in reporting the enemy at night, which was also criticized in the review, and which Admiral Craig Waller also defends, would seem to indicate that commanding officers were imbued with the idea that, at all costs, they must " conform to motions " and wait on the orders of the senior officer. Any " unnecessary use of wireless " was naturally to be discouraged—yet there was a stream of wireless signals passing throughout that night (*vide* Jutland Despatches, pp. 471–490), and, in the circumstances, there could have been no objection to shaded-lamp signalling. The fact remains that two of our battleships identified German battleships close at hand—a clear indication that the enemy fleet had closed in from the Westward ; but this vital piece of information was not even reported to the flagship of their own Squadron, much less to the Commander-in-Chief. It is no excuse to maintain that ships further from the enemy ought to have been able to see just as well—obviously they could not do so. True, the " Barham " appears to have seen sufficient to suggest that she might have questioned the " Valiant " and " Malaya " astern as to what they had sighted ; but nothing was done, and the Commander-in-Chief was left in complete ignorance of the situation.

It is always easy to be wise after the event, and nearly always unjust to assume that officers—especially those in important commands, have not acted to the very best of their judgment and ability under the prevailing conditions. But, surely, it would be a mistaken sense of loyalty which would prohibit us from appreciating and profiting by mistakes, whether of commission or omission, which subsequent analysis makes apparent. It is only by studying " what might have been " that we can gain experience for the future.

THE REVIEWER.

January, 1936.

THE ARMY AND THE AIR

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—The little article on " The Army and the Air " [1] was penned over a year ago to provoke thought on a subject which seemed to merit some attention ; and I feel flattered that it should have been found worthy of written criticism. That this criticism takes the form of a mildly acerbated, and somewhat defamatory personal attack is, perhaps, to be deplored ; the more so as it is written under a pseudonym—that of " Liaison." [2] The JOURNAL obviously has its limitations as a medium for carrying on a debate on a Service matter ; but, in deference to the intelligence of your readers, and in fairness to myself, I cannot allow " Liaison's " *dementi* to pass without comment.

Following an unsubstantiated comment that I had misrepresented facts, " Liaison " proceeds to employ the idle artifice of taking random sentences out of

[1] See the JOURNAL for August, 1935, p. 500.
[2] See the JOURNAL for November, 1935, p. 818.

their context and subjecting them to an analysis of doubtful accuracy. Round this he weaves misleading conclusions. He divides my paper into three " postulations," and attempts to defeat them in detail with the aid of assumptions of questionable soundness. These " postulations " are tabulated below with my answers :

" (*a*) That the Army Co-operation pilot has a highly specialized job ; the implication presumably being that he should therefore be trained for that job, and that job alone."

Answer : He has ; in fact, a highly specialized *series* of jobs which demand continuity of training if reasonable efficiency is to be attained. The system of interchangeability of " Specialists " and " General Duties " personnel, with consequent frequent postings, must defeat this continuity, with resultant loss in efficiency.

" (*b*) That the proportion of short and medium service officers in Army Co-operation squadrons is too high, . . ."

Answer : This is really a minor point enlarged out of its setting, but as continuity, and some degree of permanence, is desirable this is subject to the same objections as (*a*).

" (*c*) That in war, the Air Ministry is likely to withdraw pilots from A.C. squadrons to replace casualities in other units."

Answer : To quote correctly, this should have read " to fill vacancies and replace, etc."

This seemed a reasonable forecast of what might happen.

It must be realized that, whereas in the Army the officers are normally occupied in training the men ; in an A.C. squadron the other ranks are for the most part technical men who arrive in the unit already trained ; and the main consideration is the training of the officer pilots. No mobilization has been ordered, yet if the student consults the monthly Air Force Lists of the last eighteen months, the changes in the officer personnel in the Home A.C. squadrons may appear surprising. Whether this is due to normal procedure, expansion, or political expediency, must remain a matter for conjecture.

All the points " Liaison " mentions had been previously considered ; but to set up these " cockshies " only to knock them down again might have made the article tedious.

The main thesis of " The Army and the Air " was to suggest that the blind adherence to a policy formulated seventeen years ago, when world conditions were totally different, is not, of necessity, the best for the present time. May the possibility be conceded that the present policy might *not* be the most satisfactory, or is the subject *never* to be reviewed in the light of later knowledge, or future commitments ? If it is accepted that the policy is in need of examination, or modification, why should not a committee of experts thresh out the best method of modifying it ? All the minor points in dispute could then be discussed on their merits.

There is an old Scottish saying—" It's an ill bird that fyles its ain nest," but it is scarcely a sanitary bird which neglects to give its nest an occasional " spring-cleaning."

Let me add, this paper was written from a purely disinterested point of view, considering the Services as a whole, and not from any inter-Service standpoint.

I. O'B. MacGregor,
Flight-Lieutenant, R.A.F.
(*Captain, R.A.*).

Old Sarum, *19th November*, 1935.

AN INTERNATIONAL POLICE FORCE

To the Editor of the R.U.S.I. Journal.

Sir,—May I, as an ex-Police Officer, make some remarks on the subject of an International Police Force? Many of those who use the term do not seem to understand the difference between military action and police action.

A military force prepares for war in advance, but it only engages in warfare as a last resort, when negotiations and diplomatic methods fail. Governments engage in international relations up to a certain point. Then, if they cannot obtain what they desire by peaceful means, they may decide to bring military pressure to bear in order to attain the end they have in view. The Government giving the order takes upon itself the functions of accuser, judge, and executioner—and there is no appeal.

Police action is entirely different. Law, police, courts, and punishment must all be in being before it can function. Law must first be promulgated, and must be obeyed by all members of the State. The duty of the Police is to prevent breaches of the law, and to apprehend and bring offenders to justice, if it is broken. The case must then be tried by a duly empowered court, and the Police must produce evidence before it, to justify their action. Then, if there is a conviction, punishment must follow, or the whole system is brought to nought.

Granted that States would agree, it would be quite possible to organize a police system, adapted to international requirements, but nothing of the sort has as yet been attempted, or, as far as I know, even suggested. The term International Police Force seems to have been invented during the recent pacifist agitation, to disguise the fact that those who advocated it really wished the League of Nations to prepare for war, and to intervene as a belligerent and wage war, if it thought circumstances justified it in doing so. I do not wish to argue either for or against such a course. The point I wish to make is that this is not police action, and to talk of an International Police Force in such a connection is a complete misnomer.

December, 1935. X.P.O.

OUR NEXT BATTLESHIPS

To the Editor of the R.U.S.I. Journal.

Sir,—After reading the recent Naval Gold Medal Essay, and also "Our Next Battleships,"[1] I thought I would see what answer I, a soldier, got to this naval problem by using common sense, and a common mathematical method. This method was to see what the result would be if the variable factors were made enormously large or enormously small in turn. I assumed as an enemy the battleship recommended by the majority of the Gold Medallists, and that my ship was of the same displacement.

The variables are Armament, Speed, and Protection, and to each I gave values "approximating to infinity," as follows:—

Armament.	*Speed.*	*Protection.*	*Result.*
Twenty 1 6-in. guns.	Same.*	1 in.	We should probably be sunk before our mass of guns could overwhelm the enemy.
Twenty 16-in. guns	1 knot.	Same.*	We can never catch the enemy.

* The word "Same" means "same as that of the enemy."

[1] See Journals for May, 1935, p. 255, and November, 1935, p. 748.

Armament.	*Speed.*	*Protection.*	*Result.*
Same.*	50 knots.	1 in.	We should be hard to hit, but one hit would sink us.
One 12-in. gun.	50 knots.	Same.*	We might, owing to speed, sink the enemy first, but this is very unlikely.
Same.*	1 knot.	6 feet.	We can never catch the enemy.
One 12-in. gun.	Same.*	6 feet.	We can, slowly but surely, sink the enemy without being sunk ourselves.

* The word " Same " means " same as that of the enemy."

From the above it follows that :—

(*a*) Speed must be about equal to that of the enemy.
(*b*) Protection must be very high.
(*c*) Armament can be low.

This agrees with the opinion of the author of " Our Next Battleships."

M. EVERETT,
Colonel.

Newbury,
21st November, 1935.

THE SLOOP

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—Admiral Gillett's letter with regard to the historical part of Captain Blackman's lecture on Sloops is itself in need of further comment. He states that " the brigantine of the time of Charles II was a single-masted fore-and-aft craft which carried a lateen mainsail." Can he produce his authority for this ? The rig sounds to me most improbable in a Northern vessel. Can he also prove that a lateen mainsail was ever called a " brigantine sail " ? I know that the French at one time called a gaff mainsail by that name, but I doubt if even they used the expression for a lateen sail.

There was, I think, only one brigantine—so named—in the Navy of Charles II. The other " sloops " have no indication of rig, but a MS. in my possession gives details of the spars of two of them, the " Spy " and " Emsworth," and shows that both were three-masted, though the former had no mizzen topmast. We know the rig of at least one " brigantine " of the end of the XVIIth century. The logs of the " Dispatch " of 1692 were examined by Mr. Laughton in *The Mariner's Mirror* in 1921, and it was shown that she was a two-master with an ordinary square-rigged foremast and a mainmast carrying a deep square sail (as in a " buss ").

For the early part of the XVIIIth century Captain Blackman's statement as to the variable nature of a " sloop's " rig is correct. The chief evidence for this is Blanckley's *Naval Expositor*, printed in 1750, but known in manuscript form from 1732. This says that sloops " are sailed and masted as men's fancies lead them, sometimes with one mast, with two and with three. . ." In confirmation of this I can produce plans or details of spars of sloops of about 1730–50 rigged as ships, as ketches, and as two-masters, with masts more or less the same size (whether " snows " or " brigantines " I do not know). I can also point to a print of 1729 showing the " Drake, sloop," and depicting her as something very like the modern brigantine with a square-rigged foremast and a large fore-and-aft mainsail.

Admiral Gillett says he has come across no ketches save bombs. There were more than a dozen such vessels in the Navy of Charles II. As for the rig, they were

invariably two-masted with a mainmast and a mizzen—as they still are—but I doubt very much if the mizzen was kept short to " allow for the trajectory of the bomb." I think the mortar in a " bomb-ketch " was always carried before the mainmast.

Basset Holt, Southampton, R. C. ANDERSON.
19th November, 1935.

THE SINKING OF "U.B.109"

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—I have just read Admiral Keyes' *Naval Memoirs*—1916–18, in which he alludes to the sinking of the " U.B.109." The incident is still vivid in my memory.

I was Telegraphist R.N.V.R. in H.M.A.T. " St Germain " (Lieutenant Harland, R.N.R.), on traffic control duty at Folkestone Gate on 29th August, 1918, in clear and calm weather. During the afternoon a French sailing trawler was ordered out of the Folkestone Prohibited Area. At 3 a.m. on 30th August, when the watch was changed, we were about 50 yards from the inner (green) light vessel of the Gate. Ten minutes later a terrific upheaval made us think we had been mined. We rushed on deck, and the engineer and stoker reported that the engine room was flooding—actually it must have been the bilge water slopping up over the stokehold floor plates, and the Skipper (James Buchan, R.N.R/.T.) ordered " Action stations ! " and the Mate (James Marsham, R.N.R./T.) got the small boat out.

When the noise of the winch, etc., had subsided, we heard long drawn-out shouting coming from the Prohibited Area and thought that the French boat must have gone back after dark and struck a mine. Lieutenant Harland contrived, by firing Very lights, to inform the Warren signal station that we were about to enter the Prohibited Area (definite signals were afterwards arranged, I believe). By the light of an Aldis signal lamp, men and wreckage were seen floating about. The Mate went away in the small boat, and a boat put out from the light vessel.

Meanwhile a man swimming near the trawler shouted : " Chuck us a rope ! " " Wait till I get it round me." " Righto ! Heave away." We did not realize at the time that he was speaking ordinary English, and it was not till he lay on deck moaning, " Oh, I've lost my submarine ! " interspersed with a lot of German, that we realized what kind of boat had been blown up.

The light vessel's boat brought six men alongside ; our own boat brought one (believed to be the captain), making, with the one hauled aboard, eight in all. The captain and one of the men seemed badly hurt, and most had lost their clothes.

The following signal was made to Dover : " Enemy submarine blown up in Folkestone Prohibited Area, bringing in number of survivors, require armed guard and medical assistance on arrival."

We proceeded to Dover, put the survivors on the " Arrogant " and returned to patrol. The " Moonfleet " was already at the scene and busy lowering divers, etc.

On the way to Dover the man we had hauled on board told us that he had lived in England before the War, had been an officer in a cross-Channel boat, and was navigating officer in the submarine U.B.109. The U.B.109, after a very successful voyage, was returning to Germany with 48 on board (memory fails me as to the reason he gave for the large crew). They knew of the deep mine field and of the Folkestone Gate, and were intending to pass through the latter submerged to a depth of 35 feet to the keel—the deepest at which they could use their periscope. They had seen us in the Gate and had decided to pass on the landward side, not knowing of the controlled mine field and hydrophones there.

E. A. BABBS,
R.N.W.A.R.

NAVY NOTES

HIS MAJESTY THE KING

In accordance with a submission from the Lords Commissioners of the Admiralty in that behalf, the King has been pleased to assume the rank of Admiral of the Fleet. To date 21st January, 1936.

Letter of Condolence.

The following Message of Condolence was sent by the First Lord of the Admiralty to His Majesty the King, on the occasion of the death of His late Majesty King George V :—

"Lord Monsell, with his humble duty, begs to offer to your Majesty and the Royal Family, on behalf of the Board of Admiralty and the Royal Navy and Royal Marines, their deepest and most heartfelt sympathy and an assurance of their loyalty and affection."

The First Lord also sent a message of sympathy to the Queen on behalf of the Naval Forces.

GREAT BRITAIN

H.R.H. the Duke of York.

In pursuance of His Majesty's pleasure Rear-Admiral H.R.H. the Duke of York, K.G., K.T., G.C.M.G., G.C.V.O., Personal Aide-de-Camp to the King, was promoted to the rank of Vice-Admiral, to date 1st January 1936.

Lord Jellicoe.

Admiral of the Fleet Earl Jellicoe, G.C.B., O.M., G.C.V.O., died in London on 20th November, 1935. He was buried in the crypt of St. Paul's Cathedral on 25th November, next to Lord Collingwood and opposite Lord Nelson. H.R.H. the Prince of Wales attended the service representing the King; H.R.H. the Duke of York was also present.

The Pall Bearers were: Admirals of the Fleet Earl Beatty, Sir H. Oliver, Sir O. de B. Brock, Sir R. Tyrwhitt, and Sir Ernle Chatfield; Admirals Sir S. Colville and Sir W. Goodenough; Field-Marshal Lord Milne; Marshal of the Royal Air Force Sir J. Salmond; Vice-Admiral Durand-Viel of the French Navy; and Vice-Admiral Foerster of the German Navy.

Flag Promotions and Retirements.

Admiral of the Fleet the Right Hon. Earl Beatty, P.C., G.C.B., O.M., G.C.V.O., D.S.O., was placed on the Retired List on 17th January, 1936, on attaining the age of 65 years. As he was supernumerary to the Flag List no vacancy was caused. Lord Beatty was an Admiral of the Fleet on the Active List for nearly seventeen years.

On 1st January, 1936, Admirals Sir Hugh Tweedie, K.C.B., and Sir Eric J. A. Fullerton, K.C.B., D.S.O., were placed on the Retired List at their own request.

This resulted in the following promotions and retirements :—Vice-Admirals Sir W. M. Kerr, K.B.E., C.B., and Sir Barry Domvile, K.B.E., C.B., C.M.G., to be Admirals, to date 1st January, 1936; Rear-Admiral A. L. Snagge, C.B. (Supernumerary to the Flag List), to be Vice-Admiral 1st January, and placed on the Retired List 2nd January, 1936; Rear-Admirals F. M. Austin, C.B., and B. W. M. Fairbairn, C.B.E., to be Vice-Admirals, 1st January, 1936; Captains J. H. D. Cunningham, M.V.O., A.D.C., and R. B. Ramsay, A.D.C., to be Rear-Admirals, 1st January, 1936.

On 2nd January, 1936, Admirals Kerr and Domvile were placed on the Retired List at their own request. In consequence of these retirements :—Vice-Admirals the Hon. Sir Reginald A. R. Plunkett-Ernle-Erle-Drax, K.C.B., D.S.O., and Sir Martin E. Dunbar-Nasmith, V.C., K.C.B., were promoted to the rank of Admiral; Rear-Admirals F. G. G. Chilton, C.B.; A. E. F. Bedford, C.B. (Supernumerary to the List); and the Hon. Sir Alexander R. M. Ramsay, K.C.V.O., C.B., D.S.O., were promoted to Vice-Admiral; and Captains H. R. Sawbridge, O.B.E., A.D.C., and C. H. G. Benson, D.S.O., A.D.C., to Rear-Admiral. All these promotions were to date 2nd January, 1936.

On the same day Vice-Admirals Austin and Fairbairn and Rear-Admiral R. B. Ramsay were placed on the Retired List. This led to the following promotions, also dated 2nd January, 1936 :—Rear-Admirals S. J. Meyrick, C.B., and G. C. Dickens, C.B., C.M.G., to the rank of Vice-Admiral; Captains H. FitzHerbert, C.M.G., A.D.C., and E. C. O. Thomson, D.S.O., A.D.C. (Commodore 2nd Class), and L. V. Wells, D.S.O., A.D.C., to Rear-Admiral.

Rear-Admirals Sawbridge and Benson were placed on the Retired List on 3rd January, 1936. In consequence Captains A. J. Robertson, M.V.O., and W. B. Mackenzie were promoted to Rear-Admiral the same day, and placed on the Retired List on 4th January, 1936. These vacancies were filled by the promotion to the rank of Rear-Admiral of Captains G. C. Harrison and A. H. Taylor, O.B.E.

These officers were placed on the Retired List on 5th January, 1936, which resulted in the promotion to Rear-Admiral on that date of Captains R. Leatham and S. St. L. Moore.

Flag Appointments.

Mediterranean.—Admiral Sir Dudley Pound, K.C.B., Commander-in-Chief designate, has temporarily assumed the duties of Chief of the Staff to Admiral Sir William Fisher, G.C.B., G.C.V.O., to date 9th October, 1935.

Rear-Admiral R. H. T. Raikes, C.V.O., D.S.O., the former Chief of the Staff, hoisted his flag in the Repair Ship " Resource " at Alexandria on 16th October, 1935.

Rear-Admiral G. F. B. Edward-Collins, who had been appointed Chief of the Staff to Sir Dudley Pound, is serving temporarily as Chief Staff Officer to Rear-Admiral Raikes.

Vice-Admiral H. J. S. Brownrigg, C.B., D.S.O., who had been appointed Admiral Commanding Reserves, to date 15th October, 1935, is now shown in the Navy List under President IV in command of Mediterranean Base Defences, under date 3rd September, 1935.

Rear-Admiral A. E. Evans, O.B.E., formerly in command of the South American Division of the America and West Indies Station, consisting of " Exeter " and " Ajax," which for some time have been detached to the Mediterranean, is now

Rear-Admiral, Second in Command, First Cruiser Squadron, to date 17th October, 1935.

ORDNANCE COMMITTEE.—Rear-Admiral E. O. B. S. Osborne, C.B., D.S.O., was appointed Vice-President of the Ordnance Committee, to date 2nd January, 1936, in succession to Major-General R. F. Lock, who has succeeded Vice-Admiral B. W. M. Fairbairn, C.B.E., as President.

DIRECTOR OF PERSONAL SERVICES.—The date of the appointment of Rear-Admiral G. Layton, D.S.O., as Director of Personal Services has been amended to 25th February, 1936. The original date was 8th November, 1935, but at that time his successor as Commodore of the Royal Naval Barracks, Portsmouth, Captain L. E. Holland, was still in command of H.M.S. " Revenge " in the Mediterranean.

NAVAL CONFERENCE.

A Naval Conference, consisting of delegates from the British Empire, U.S.A., Japan, France and Italy, assembled for its first session in the Locarno Room at the Foreign Office, London, on Monday, 9th December, 1935. The Prime Minister, Mr. Stanley Baldwin, presided at this meeting; after welcoming the delegates he announced that the first duty would be to elect a President and Vice-President. The then Foreign Secretary, Sir Samuel Hoare, and the First Lord of the Admiralty, Lord Monsell, respectively, were unanimously elected. The Chief British Advisers to the Conference are the First Sea Lord, Sir Ernle Chatfield; the Secretary of the Treasury, Sir Warren Fisher; the Assistant Under-Secretary of the Foreign Office, Mr. R. L. Craigie; and the Deputy Chief of the Naval Staff, Vice-Admiral W. M. James.

(See also INTERNATIONAL SITUATION, p. 175.)

THE MEDITERRANEAN FLEET.

On 16th October, in response to an inquiry from the French Government, the British Ambassador in Paris handed to M. Laval a note to the effect that the British Government were not prepared to reduce the Fleet in the Mediterranean to a normal footing even if the Italian Government were willing previously to withdraw their extra troops from Libya. Since then the political situation has not permitted of the relaxation of the precautions referred to in Navy Notes in the November JOURNAL; and the Fleet in, or in proximity to, the Mediterranean has been maintained at approximately the strength and in the dispositions then outlined.

SHIP MOVEMENTS.—Various reliefs of ships due to return home to recommission or refit have taken place.

H.M.S. " Ramillies " left England on 1st November to relieve H.M.S. " Resolution," which had completed two years' service on the station. The " Resolution " returned home and reduced to one-fifth complement. Recently the " Ramillies " was recalled to England, and arrived at Sheerness on 17th January.

H.M.S. " Renown," which had been stationed at or near Gibraltar, proceeded Eastwards early in January, taking the place at Alexandria of H.M.S. " Revenge." The " Revenge " arrived at Portsmouth on 11th January; before leaving Alexandria she had transferred the flag of Vice-Admiral Sir C. M. Forbes, K.C.B., D.S.O., Second in Command, Mediterranean Station, to the " Valiant."

In November the new Australian cruiser " Sydney," which had been put at the disposal of the Admiralty by the Commonwealth Government, proceeded to Gibraltar to relieve H.M.S. " Achilles," which latter returned to Chatham and reduced to special complement.

In addition to the ships mentioned in last quarter's JOURNAL as having been detached from the China Station, the destroyers " Decoy " and " Defender " arrived at Aden on 24th November.

On 5th November it was announced that the " Kempenfelt " and " Cygnet " had arrived at Bombay. These ships belong to the Second Flotilla, Home Fleet, and had been detached. It is understood that they had been employed in the Red Sea.

On 13th January the " Nelson," " Rodney," " Furious " and other units of the Home Fleet left England for the usual spring cruise to the Spanish coast and Gibraltar ; at the same time the " Hood," " Ramillies," " Neptune," and " Orion " left Gibraltar for England.

Various short cruises of ships within or near the Mediterranean have taken place with a view to giving ships' companies some relief from the monotony of prolonged spells at one port.

BASE DEFENCES, MEDITERRANEAN.—The November and subsequent Navy Lists show, under President IV, Base Defences, Mediterranean, in which Vice-Admiral H. J. S. Brownrigg, C.B., D.S.O., and Staff appear, followed by a number of officers, mostly Royal Marine officers, under Brigadier W. L. H. Tripp, C.B., D.S.O., M.C. It is understood that this force is at Alexandria.

PERSONNEL.

EXCESS OF AUTHORIZED PERSONNEL.—In a White Paper issued on 6th December, the First Lord of the Admiralty stated that the authorized maximum number of officers, men and boys of the Fleet for the financial year ending on 31st March, 1936, was 94,482. The present international crisis had necessitated the strengthening of the Mediterranean Fleet, and the completion of several ships of the Reserve Fleet for service in the Home Fleet to replace units detached. This, in turn, entailed the service afloat of more officers and ratings than usual. In order not to interfere more than necessary with training, drafting, and reliefs, the authorized maximum had been exceeded. The First Lord is to take steps to obtain parliamentary sanction for this excess and will submit a supplementary estimate for the extra funds required.

The manning situation is undoubtedly very difficult at present in view of the requirements for ships recently commissioned and those about to be put into service —referred to elsewhere in these Notes. This, presumably, accounts largely for the fact that no less than five battleships, the " Warspite," " Malaya," " Resolution," " Royal Oak," and " Revenge," are paid off in dockyard control or have a reduced complement.

H.M.S. " Royal Sovereign " has now reduced to special complement as a training ship, the flag of the Rear-Admiral, Second Battle Squadron, having been transferred to the " Rodney."

CHAPLAIN OF THE FLEET.—The Rev. A. D. Gilbertson, O.B.E., M.A., K.H.Ch., assumed the office of Chaplain of the Fleet on 11th December, 1935, in succession to the Ven. Archdeacon C. J. E. Peshall, C.B.E., D.S.O., M.A. The new Chaplain of the Fleet was formerly Chaplain of the Royal Hospital School, Greenwich and Holbrook.

FLAG CAPTAINS' COMMAND MONEY.—All Flag Captains are now to receive Command Money at the rates applicable to their type of ship, as from 30th October, 1935. Entertaining allowance, however, remains at the present " Flag " rate.

AGE LIMITS FOR CADETS.—The age limits for the entry of special-entry Cadets (executive and engineering) and Paymaster Cadets have been raised from 17–18

to 17–18½ years as from the June, 1936, examination. For first appointment in the Royal Marines the age limits remain as before, i.e., 17½ to 19½ years.

NEWMAN MEMORIAL PRIZE for 1934–35 has been awarded to Sub-Lieutenant (E) G. H. Chambers, R.N., H.M.S. "Courageous." This prize, which consists of books and scientific instruments, is awarded to the officer qualifying for Engineering duty who takes the first place at the examination in practical engineering on the completion of his specialist course.

PARKES MEMORIAL PRIZE for 1935 was awarded to Surgeon-Lieutenant J. L. S. Coulter, R.N., H.M.H.S. "Maine." This prize, consisting of seventy-five guineas and a gold medal, is awarded every third year to the writer of the best essay on a subject connected with hygiene. The competition is open to medical officers of the Royal Navy, Army, and Indian Army on full pay.

GEDGE MEDAL AND PRIZE for 1935 was awarded to Paymaster Sub-Lieutenant B. K. Freedman, R.N., H.M.S. "Diomede." The prize, consisting of a gold medal and books, is awarded to the Paymaster Sub-Lieutenant who has passed the examination for that rank at the first attempt and with the highest percentage of marks. It was instituted and subscribed for by the Accountant Officers' Dining Club to commemorate the late Staff Paymaster J. T. Gedge, R.N., of H.M.S. "Amphion," who was the first British officer of all the fighting Services to be killed during the Great War.

JACKSON-EVERETT PRIZE for 1935 was awarded to Lieutenant R. T. Paul, R.N., H.M.S. "Nelson." The prize is awarded to the officer who passes the best final examination (Greenwich V/S and W/T) in the qualifying course for signal officers.

EARDLEY-HOWARD-CROCKETT PRIZE.—One of these prizes, consisting of books or instruments, awarded to Naval Cadets for qualities of leadership and good example, was presented to Cadet J. R. Carden, who passed out of H.M.S. "Frobisher" in December, 1935.

COMMANDER EGERTON MEMORIAL PRIZE for 1935 was awarded to Lieutenant F. R. Twiss, R.N., for the best examination paper in practical gunnery when specializing.

A.R.N.O.—On Trafalgar Day last, the tenth anniversary of its formation, H.M. King George V graciously signified his acceptance of the office of Patron of the Association of Retired Naval Officers. Membership now exceeds 3,000.

ROYAL NAVAL FLYING CLUB.—This club was formed in 1931 to encourage private flying among naval officers, and now has a membership of about 200. All commissioned officers of the Royal Navy and Royal Marines (including retired officers) are eligible to join; also subordinate officers on the Active List. The entrance fee is fifteen shillings, and the annual subscription thirty shillings. Members of the R.N.F.C. become automatically members of various other flying clubs where facilities for learning to fly under experienced instructors are provided. The Club is governed by a committee under the Chairmanship of Rear-Admiral C. E. Kennedy-Purvis, C.B. The Headquarters are c/o Royal Aeronautical Society, 7, Albemarle Street, W.1.

MATERIAL.

NEW CONSTRUCTION.—The following new ships were commissioned for Service during 1935:—

Cruisers.—" Ajax," " Arethusa," " Galatea," " Sydney " (for R.A.N.).
Flotilla Leader.—" Faulknor."

Destroyers.—" Fortune," " Fame," " Forester," " Firedrake," " Foresight," " Foxhound," " Fury." (N.B.—" Fearless," of this class, was commissioned on 22nd December, 1934.)

Submarines.—" Salmon," " Snapper," " Clyde."

Sloops.—" Enchantress " (late " Bittern "), " Londonderry," " Wellington," " Deptford," " Indus " (for R.I.N.), " Yarra " (for R.A.N.).

Coastal Sloop.—" Kingfisher."

Minesweeping Sloops.—" Hussar," " Speedwell."

During 1936 the following ships should be completed :—

Cruisers.—" Amphion " and " Apollo " of the 1932 programme ; and " Penelope " of the 1933 programme.

Flotilla Leaders.—" Grenville " (1933) and " Hardy " (1934).

Destroyers.—" Greyhound," " Griffin," " Garland," " Gallant," " Gipsy," " Grenade," " Grafton," " Glowworm "(1933), " Hero," " Havock," " Hasty," " Hunter," " Hereward," " Hotspur," " Hostile," " Hyperion " (1934).

Submarines.—" Grampus " and " Narwhal " (minelaying submarines), and " Seawolf " (small coast defence type), all of the 1933 programme.

Sloops.—" Aberdeen," " Fleetwood," and " Swan " (for R.A.N.)

Minesweeping Sloops.—" Niger," " Salamander."

1935 PROGRAMME.—Names have now been allotted to the ships of the 1935 building programme :—

Cruisers—all of the " Southampton " class (9000 tons)—are to be called " Liverpool," " Manchester " and " Gloucester." " Manchester," like " Sheffield," of the 1934 programme, is a new name to the Navy List.

Submarine Depot Ship.—" Maidstone."

Flotilla Leader.—" Inglefield."

Destroyers.—" Icarus," " Ilex," " Imogen," " Imperial," " Intrepid," " Impulsive," " Isis," " Ivanhoe."

Submarines.—" Cachalot " (minelayer), " Sterlet " (Swordfish class, coast defence submarines) and " Triton."

Minesweeping Sloops.—" Hazard," " Hebe," " Sharpshooter."

Convoy Sloop.—" Bittern."

Coastal Sloops.—" Sheldrake," " Kittiwake."

Surveying Ship.—" Gleaner."

Magnetic Survey Ship.—" Research."

Coastal Minelayer.—" Plover."

Boom Gate Vessels.—" Ebgate," " Bargate."

1934 PROGRAMME.—All ships of this programme are now building.

1933 PROGRAMME.—The dates of launching of the two remaining cruisers of this programme are " Newcastle," on 23rd January, and " Southampton," on 10th March.

All the destroyers (" G " Class) were launched during 1935, and should be ready for service during the present quarter.

If the practice of recent years of not laying down ships during the year in which they appear in the Naval Estimates is maintained, it is probable that the " Liverpool," " Manchester," and " Gloucester " will be the last to be built under the restrictions of the present London Naval Treaty, which expires at the end of the year.

BATTLE CRUISERS.—The battle cruiser " Repulse," after being in dockyard hands since 1932, for large repairs, commissioned in January for service. On 29th October the Admiralty announced that an order for new machinery for H.M.S. " Renown " had been placed with Messrs. Cammell Laird, Birkenhead.

NEW COASTAL MOTOR BOATS.—The Admiralty have ordered from the British Power Boat Company, Southampton, six coastal motor boats. This is the first order for this type of craft since 1922.

SPEED BOATS FOR DESTROYERS.—Trials have recently been carried out at Southampton of high-speed launches for use by destroyers. Twenty-five of these boats have been ordered. Their length is 25 feet. They have a 100 h.p. engine which gives a normal speed of 22 knots and a maximum of 26 knots. They are stated to be very handy craft and remarkably seaworthy.

MISCELLANEOUS

FISHERY PROTECTION FLOTILLA.—H.M.S. " Harebell," ship of the Captain Fishery Protection and Minesweeping Flotillas, is to be relieved by H.M.S. " Hastings," when the latter has completed repairs. The " Hastings " grounded in the Red Sea in June and was not refloated until September.

H.M.S. " Lupin," formerly of the Persian Gulf Flotilla, is to take the place of H.M.S. " Godetia " as ship of the Local Fishery Naval Officer, North Sea. The " Lupin," in turn, will be relieved by H.M.S. " Penzance," when that ship becomes available.

SABOTAGE.—The Admiralty announced on 10th December, 1935, that cases of attempted sabotage had been discovered on board the battleship " Royal Oak " and the submarine " Oberon," both at Devonport. The statement added that it was not in the public interest to publish details.

NEW BOYS' TRAINING ESTABLISHMENT.—The January, 1936, Navy List shows, as part of H.M.S. " Drake "—R.N. Barracks, Devonport, the nucleus of a new Boys' Training Establishment at that port. Formerly H.M.S. " Impregnable " was the local Establishment for Boys, but it was closed in 1929. Since then the only Boys' Training Establishments have been H.M.S. " Ganges," at Shotley, and H.M.S. " St. Vincent," at Forton, Gosport.

ROYAL MARINES

The Admiralty, in a Fleet Order dated 18th October, 1935, issued an expression of their approbation of the high state of drill and of the exemplary conduct of all ranks, both on and off duty, during the period that the Royal Marine Battalion was carrying out guard duties in London last summer.

DOMINION NAVIES

ROYAL CANADIAN NAVY

During a training cruise, which commenced in January, the four destroyers of the Royal Canadian Navy are joining forces with ships of the Royal Navy. The Eastern Division, consisting of the " Saguenay " and " Champlain," arrived at Bermuda from Halifax on 16th January. The Western Division, " Skeena " and " Vancouver," which are based on Esquimault, left that port on 20th January for a cruise through the Panama Canal, to Kingston, Jamaica, where they are to join the Eastern Division on 20th February. Subsequently all four destroyers will leave for exercises.

NEW ZEALAND

A report on the New Zealand Naval Forces was recently published. On 31st March, 1935, the force consisted of the cruisers " Dunedin " and " Diomede," the training ship " Philomel," trawler " Wakakura," and oiler " Nucula." In addition, the sloops " Leith " and " Laburnum " were maintained at the expense of the Imperial Government. The " Laburnum " has now been replaced by H.M.S. " Wellington." There were 477 New Zealand ratings on the Active List and 437 ratings loaned from the Imperial service.

The New Zealand Division of the Royal Naval Reserve consisted of 8 officers and 100 men.

FOREIGN NAVIES

ARGENTINE

A new training cruiser is being built to the order of the Argentine Government by Messrs. Vickers at Barrow. This will be a ship of about 6–7,000 tons, with an armament of nine 6-in., four 4-in. A.A., and eight 2-pdr. A.A. guns; also six torpedo tubes on triple mountings. She is being equipped with a catapult and will carry two aircraft. The designed full speed is 30 knots. Accommodation will be provided for 60 cadets in addition to the complement of 543. The vessel is due for completion by the end of 1937, when she will replace the present masted training ship " Presidente Sarmiento."

BRAZIL

The early " Dreadnought " type battleship " Minas Geraes " is undergoing extensive alteration and modernization. The work includes the replacing of the original two funnels by a single one amidships, the rearrangement of control positions and bridges, and the provision of long-base range-finders. Coal is being replaced by oil firing. The gun positions of the secondary armament have been altered to improve efficiency.

A new organization has been created, and is known as the Marine Air Force. This is under a Director of Aeronautics, who deals with the technical and administrative aspects of the Service, but it is under the Naval General Staff for operational training. It comprises aircraft for use with the fleet, and also those operated from shore bases in defence of ports and the sea coast. Naval air bases are under the commanders of naval districts.

FRANCE

NEW BATTLESHIPS.—The two 35,000-ton battleships will be named " France " and " Patrie." The former has been laid down in the Salou basin at Brest. The latter will take the place of the " Strasbourg " on the slips at St. Nazaire. The " France," like the " Dunkerque," will have the bow portion built separately.

MODERNIZATION.—The battleships " Provence," " Lorraine," and " Bretagne " have all been modernized. In the case of the " Lorraine " the centre turret has been removed and replaced by a catapult with stowage for two aircraft. The protection of all three ships has been improved, the elevation of the main armament increased, and the boilers are now oil fired. It is possible that these ships may now be capable of 23 knots.

NEW CRUISERS.—The fifth of the " B " class cruisers, " Montcalm," was launched on the 20th October. The whole of this class should be in service before the end of 1937.

SUBMARINES.—France now has the greatest submarine flotilla in the world; built or building, she possesses 111 underwater craft. The largest is the " Surcouf," of 2,880 tons, carrying two 8-inch guns and 14 tubes. The smallest are craft of 597 tons, which carry one 3-inch gun and eight tubes. The latest first-class submarines have a surface displacement of 1,379 tons and carry one 3.9-inch gun and 11 tubes.

CRUISE OF THE 2ND SQUADRON.—A cruise of the 2nd Squadron from Brest commenced on the 16th January. The ships are visiting ports on the North-West coast of Morocco and are carrying out exercises. They were due to return to Casablanca on the 11th February, and to Brest by the 26th February.

It has been formally denied that these movements have anything to do with the international situation, or that it was the intention to reinforce the 1st Squadron in the Mediterranean while the question of oil sanctions was being discussed at Geneva.

GERMANY

ADMIRALTY.—The *Marineleitung* has been considerably increased to meet the expansion of the navy. The Commander-in-Chief of the navy, Admiral Raeder, has a Chief of the Staff, Admiral Densch, a personal A.D.C., two liaison officers for the Naval Attachés, a communication officer, and a Surgeon Commander, and there is a Naval A.D.C. to the Chancellor, who also works in the C.-in-C.s office. The six Naval Attachés are directly under the Commander-in-Chief. The Personnel Section is under a Kapitan zur See, who now has a staff of twelve. The Naval Staff Departments have been increased from 43 to 93, and the Construction, Equipment, Hydrographic, Navigation, and Dockyard Departments (*Allgemeine Marineamt*) from 42 to 73. The Ordnance Department is under a Rear-Admiral. There is also a large number of naval officers in the *Wehrmachtamt* (part of the War Ministry), also in the *Wehrwirtschaftliche-Abteilung* (Department for Industrial Mobilization).

GERMAN FLEET.—It is understood that the new battleship " Admiral Graf Spee " will be the Fleet Flagship of the Commander-in-Chief. The flag of the Admiral commanding the Battle Fleet is flown in the " Deutschland." The " Leipzig " is due to relieve the " Königsberg " as flagship of the Scouting Forces.

NAVAL BASES, ETC.—It is understood that Kiel will in future be the main battleship base, and the dry docks there are to be enlarged to take the new ships. A floating dock is also being provided. The cruisers will use Wilhelmshaven. Emden, Bremerhåven, Swinemunde, and Pillau will have an increased number of vessels based on them.

INSPECTORATES.—Under the new organization there are Inspectors of Training, Torpedoes and Mines, Gunnery, and Engineering. The first three are each under a Flag Officer, and the latter under an Engineer Rear-Admiral.

ITALY

BATTLESHIPS.—It is reported that the new 35,000-ton battleships "Littorio" and "Vittorio Veneto" will be 754 feet long, 103⅝ feet beam, and approximately 30 feet draught. An armament of nine 15-inch guns in triple turrets and a speed of 34 knots have also been mentioned. In addition, Italy has four older battleships, two of which, the "Cavour" and "Cesare," are undergoing extensive reconstruction.

CRUISERS.—There are twenty-seven cruisers, and three more building. Of the latter the "Savoia," of the so-called "Condottieri" class, although nominally of only 6,791 tons, is estimated to displace approximately 9,000 tons with stores and ammunition on board. Two later ships, the "Abruzzi" and "Garibaldi," will be armed with ten instead of eight 6-inch guns, and will certainly displace at least 9,000 tons instead of the scheduled 7,874; the former was due for launching early in 1936, and the latter probably later in the year.

DESTROYERS.—There are ninety-eight leaders, destroyers, and torpedo-boats; and eight more building. A recent addition to the building programme has been four vessels of 1,850 tons laid down at the Orlando Yard. These will carry four 4.7-inch and eight smaller guns and six tubes.

SUBMARINES.—Sixty-four submarines are also with the fleet, and thirteen more are building.

JAPAN

CAPITAL SHIPS.—All the capital ships should have been modernized by the end of the fiscal year 1936–37. Some of them have already been in hand twice for this process: the "Karishima" and "Kongo," originally battle cruisers, are now undergoing a second treatment. The "Ise" and "Hyuga" will be the last to be dealt with. They are the only battleships which still burn coal, and will doubtless also be converted to oil.

AIRCRAFT CARRIERS.—The 10,000-ton aircraft carrier "Soryu" ("Blue Sky Dragon") and a 10,000-ton seaplane carrier, the "Chitose," are both building at Kure. Another aircraft carrier and two seaplane carriers are projected.

CRUISERS.—Three of the new 8,500-ton cruisers, the "Mogami," "Mikuma," and "Suzuya," are now complete. The "Kumano" has been launched, and the "Tone" and "Chikuma" are on the stocks. These ships carry fifteen 6.1-inch guns, eight 5-inch A.A. guns in twin turrets, and twelve torpedo tubes. They are fitted with catapults for two aircraft. The "Tone" will have an increase in beam as compared with the earlier ships, possibly in order to give better stability.

DESTROYERS.—With a displacement of only 1,368 tons, Japan is mounting an armament of five 5-inch guns and eight torpedo tubes. This is almost equal to the armament of French torpedo craft of nearly 1,000 tons greater displacement; but the designed speed of the Japanese vessels is only 34 knots as compared with 37 knots in the latter, which in practice have greatly exceeded that speed on trials, running light.

Six of the twelve destroyers of the "Ariake" class are complete. The single 5-inch superimposed gun has been removed from the original position before the bridge and is now mounted back to back with the twin turret aft. This alteration follows the capsizing of the torpedo boat "Tomodzuru" and has doubtless been done to reduce top weight.

TORPEDO BOATS.—Sixteen torpedo boats of 395 tons, small editions of the

" Tomodzuru " class, are building or projected. They will have an armament of three 4.7-inch guns and three torpedo tubes. The designed speed is 28 knots.

SUBMARINES.—In addition to the three normal classes of submarines—cruiser, fleet, and coastal types—Japan is building miniature submarines. It is understood that these are craft displacing only about 12 tons, with a length of 32.5 feet, electrically driven and having a very low under-water speed. The armament consists of one torpedo tube and a machine gun. There is a crew of four, and the vessel can remain submerged for about three hours.

NETHERLANDS

The cruiser " De Ruyter " is due to commission in the summer of this year for service in the East Indies.

A small cruiser, to be called the " Tromp," is under construction. Originally described as a flotilla leader, she now appears to be a vessel of 3,350 tons armed with six 5.9-inch, six 40 mm., A.A. and four 12.7 mm. A.A. guns; also six 21-inch torpedo tubes.

Four minesweepers and two submarines are also under construction.

SWEDEN

Two destroyers, the " Göteborg " and " Stockholm," are building at Göteborg and Karlskrona, and are due to be completed in the spring and autumn of this year respectively. They are vessels of the " Ehrensköld " class, displacing 895 tons, with an armament of three 4.7-inch and two 2-pdr. A.A. guns, and six 21-inch torpedo tubes. The designed speed is 35 knots.

UNITED STATES

NEW CONSTRUCTION.—The last unit of the 1935–36 programme 6-inch gun cruisers is being built by the Newport News Shipbuilding and Dry Dock Company. The vessel is due for completion in January, 1939.

The aircraft carrier of that programme is understood to be a vessel of only 14,500 tons as compared with the 20,000 tons of the " Yorktown " and " Enterprise." This is similar to the " Ranger," completed in 1934.

The twelve destroyers of this programme are due for completion during 1936–37. The leaders are to be armed with eight 5-inch guns in four twin turrets and two quadruple torpedo tubes. This is a heavier armament than that carried by any ships of a similar class, built or building for any other Power.

The six submarines laid down in 1935 are due for completion in 1937. They have been given the names " Salmon," " Seal," " Skipjack," " Snapper," " Sting-ray," and " Sturgeon."

NAVAL AIR SERVICE.

SEAPLANE FLIGHT.—It is reported that the Navy Office is proposing to acquire a large fleet of aircraft similar to the naval seaplane which made the record non-stop flight from Panama to Alameda, California, on the 15th October last. On this occasion a distance of 3,387 miles was covered in under 35 hours.

NON-RIGID AIRSHIP.—A non-rigid airship, " G.1," has been purchased for the navy. It is six years old and has hitherto been used for passenger work. It is now based on Lakehurst, New Jersey.

ARMY NOTES

HIS LATE MAJESTY KING GEORGE V AND HIS REGIMENTS

His late Majesty King George V was Colonel-in-Chief of the following regiments :—

The Life Guards.
Royal Horse Guards (The Blues).
1st The Royal Dragoons.
10th Royal Hussars (Prince of Wales's Own).
Royal Regiment of Artillery.
Corps of Royal Engineers.
Grenadier Guards.
Coldstream Guards.
Scots Guards.
Irish Guards.
Welsh Guards.
The King's Own Royal Regiment (Lancaster).
The Royal Fusiliers (City of London Regiment).
The King's Regiment (Liverpool).
The Royal Norfolk Regiment.
The Royal Welch Fusiliers.
The Black Watch (Royal Highland Regiment).
The King's Royal Rifle Corps.
The Manchester Regiment.
The Queen's Own Cameron Highlanders.
The Royal Irish Fusiliers (Princess Victoria's).
Royal Tank Corps.
The Duke of Lancaster's Own Yeomanry.
108th (Suffolk and Norfolk Yeomanry) Army Field Brigade, Royal Artillery.
8th (Isle of Wight Rifles)" Princess Beatrice's " Battalion.
Officers' Training Corps.
Royal West African Frontier Force.
The King's African Rifles.
Ceylon Defence Force.

Captain-General and Colonel :—
Honourable Artillery Company.

Honorary Colonel :—
Royal Malta Artillery.
3rd Battalion (2nd West Yorkshire Militia) The West Yorkshire Regiment (The Prince of Wales's Own).

Colonel-in-Chief :—
Skinner's Horse (1st Duke of York's Own Cavalry).
Probyn's Horse (5th King Edward's Own Lancers).
8th King George's Own Light Cavalry.
18th King Edward's Own Cavalry.

19th King George's Own Lancers.
The Central India Horse (21st King George's Own Horse).
King George's Own Bengal Sappers and Miners.
4th Bombay Grenadiers.
10th Baluch Regiment.
11th Sikh Regiment.
1st King George's Own Gurkha Rifles (The Malaun Regiment).
2nd King Edward's Own Gurkha Rifles (The Sirmoor Rifles).

HIS MAJESTY THE KING

His Majesty the King has been pleased to assume the rank of Field-Marshal, with effect from 21st January, 1936.

Letter of Condolence.

The following Message of Condolence was sent by the Secretary of State for War to His Majesty the King, on the occasion of the death of His late Majesty King George V :—

"Mr. Duff Cooper, with his humble duty, begs leave to submit, on behalf of the Army Council and the Army, the respectful expression of their profound sympathy with your Majesty and the Royal House.

"His late Majesty's unfailing interest in all that concerned the well-being of the Army in peace and in war will always be gratefully remembered by those who had the honour to be in his service."

HOME

H.R.H. the Duke of York.

H.M. the King has been graciously pleased to give orders for the following promotion in the Army :—

Major-General His Royal Highness the Duke of York, Earl of Inverness, K.G., K.T., G.C.M.G., G.C.V.O. ; Colonel, Scots Guards ; Colonel-in-Chief, 11th Hussars (Prince Albert's Own) ; The Somerset Light Infantry (Prince Albert's) ; The East Yorkshire Regiment (The Duke of York's Own) ; Royal Army Ordnance Corps ; and the Leicestershire Yeomanry (Prince Albert's Own) (Hussars) ; Personal Aide-de-Camp to the King ; to be Lieutenant-General ; to date 1st January, 1936.

Appointments and Promotions.

H.M. the King has been pleased to approve of the following appointments, awards, and promotions :—

The Order of the Bath, K.C.B. (Military Division).—Lieutenant-General E. T. Humphreys, C.B., C.M.G., D.S.O. Lieutenant-General W. W. Pitt-Taylor, C.B., C.M.G., D.S.O. Lieutenant-General R. J. T. Hildyard, C.B., C.M.G., D.S.O.

The Order of Merit.—Field-Marshal Sir Philip W. Chetwode, Bart., G.C.B., G.C.S.I., K.C.M.G., D.S.O., Colonel, The Royal Scots Greys and the 8th (K.G.O.) Light Cavalry.

HONORARY PHYSICIANS TO THE KING.—Major-General T. S. Coates, O.B.E., M.B., late R.A.M.C. Lieut.-Colonel J. Heatley-Spenser, O.B.E., M.D., F.R.C.P., late R.A.M.C. Lieut.-Colonel R. N. Chopra, C.I.E., M.B., I.M.S.

HONORARY SURGEONS TO THE KING.—Major-General O. Ievers, D.S.O., M.B., late R.A.M.C. Colonel E. W. C. Bradfield, C.I.E., O.B.E., M.B., M.S., F.R.C.S. (Edin.), Honorary Surgeon to the Viceroy of India. Lieut.-Colonel A. J. H. Russell, C.B.E., M.D., I.M.S., Honorary Surgeon to the Viceroy of India. Lieut.-Colonel A. A. C. McNeill, M.B., I.M.S. Lieut.-Colonel A. J. H. Russell, Lieut.-Colonel R. N. Chopra and Lieut.-Colonel A. A. C. McNeil are promoted to the rank of Brevet-Colonel.

COLONEL-COMMANDANT, ROYAL ENGINEERS.—Major-General A. G. Stevenson, C.B., C.M.G., D.S.O.

COLONEL OF THE SHERWOOD FORESTERS (Nottinghamshire and Derbyshire Regiment).—Major-General Sir F. B. Maurice, K.C.M.G., C.B.

REPRESENTATIVE COLONELS-COMMANDANT FOR 1936.—Major-General E. H. Willis, C.B., C.M.G., Royal Artillery. Lieutenant-General Sir J. Ronald E. Charles, K.C.B., C.M.G., D.S.O., Royal Engineers. Colonel (honorary Brigadier) H. C. Smith, D.S.O., Royal Corps of Signals. Colonel (honorary Major-General) Sir Ernest D. Swinton, K.B.E., C.B., D.S.O., Royal Tank Corps. The Reverend J. D. S. Parry-Evans, C.M.G., C.B.E., Chaplain-Commandant, Royal Army Chaplains' Department. Major-General W. K. Tarver, C.B., C.M.G., Royal Army Service Corps. Major-General O. L. Robinson, C.B., C.M.G., Royal Army Medical Corps. Major-General J. Baker, C.B., Royal Army Ordnance Corps.

MILITARY ATTACHÉ TO HIS MAJESTY'S EMBASSY AT TOKYO, from 5th May, 1936.—Major-General F. S. C. Piggott, D.S.O.

Major-General Piggott has had a long and close association with Japan. His father, the late Sir Francis Piggott, was legal adviser to the Japanese Government. Major-General Piggott served in Japan during the Russo-Japanese War, 1904–06, was attached to the Japanese Army, 1910–15, and acted as Military Attaché from 1922–26.

REGIMENTAL ALLIANCES.—The Battleford Light Infantry, Non-Permanent Active Militia of Canada, to be allied to the 46th Battalion (The Brighton Rifles) Australian Military Forces.

The Bermuda Volunteer Engineers to be allied to the Corps of Royal Engineers.

CHANGE IN DESIGNATION.—The 13th/18th Hussars to be designated the 13th/18th Royal Hussars (Queen Mary's Own).

INNS OF COURT REGIMENT.—The carrying of Colours, in accordance with the following design, is approved :—

The King's Colour—The Union.—In the centre the title of the regiment on a crimson circle ensigned with the Imperial Crown.

The Regimental Colour—Vert.—The title of the regiment on a crimson circle within a union wreath, a figure of Justice in the centre ; below on the wreath " Salus populi suprema lex " ; the whole ensigned with the Imperial Crown. Underneath on a scroll " South Africa, 1900–01."

VICTORIA CROSS.—The posthumous award of the Victoria Cross has been made to the late Captain Godfrey Meynell, M.C., 5th Battalion (Queen Victoria's Own Corps of Guides) 12th Frontier Force Regiment, Indian Army, for " most conspicuous gallantry and devotion to duty." The award relates to the action of

29th September, 1935, against the Mohmands, in which Captain Meynell was killed. He took command of a detachment of thirty men, who were cut off in an exposed position. After a most heroic defence against overwhelming numbers, the whole detachment was killed or wounded.

The War Office announces the following promotions :—

Colonel (temporary Brigadier) A. P. Y. Langhorne, D.S.O., M.C., *i.d.c.*, *p.s.c.*, to be Major-General with effect from 7th November, 1935.

Major-General Langhorne joined the R.A. from the Militia in 1902, and saw active service in the Bazar Valley and with the Mohmand Field Force in 1908. He was appointed Brigade Major, R.A., in France, in 1917, and became later G.S.O.2. His last appointment was Brigadier, R.A., Aldershot Command.

Colonel (temporary Brigadier) E. C. Gepp, D.S.O., *p.s.c.*, to be Major-General from 13th November, 1935.

Major-General Gepp served in the ranks of the Imperial Yeomanry in the South African War, in which he was wounded. He was commissioned to the Regular Army in 1901 and saw service again in Somaliland from 1908 to 1910. Leaving the Army in 1911, he joined the Special Reserve and was called up in August, 1914. Promoted Major in the D.C.L.I. in 1917, he was appointed G.S.O.1, in France, by the end of that year. He was G.S.O.1, and later A.A. and Q.M.G., at the Staff College, Quetta, from 1920 to 1924, and his last appointment was Commandant, Small Arms School, Netheravon.

Colonel (temporary Brigadier) E. K. Squires, D.S.O., M.C., *i.d.c.*, *p.s.c.*, to be Major-General from 14th December, 1935.

Major-General Squires joined the R.E. in 1903, was promoted Captain, and went to France in 1914. He served in France from 1914 to 1915, and Mesopotamia 1916 to 1918. He was twice wounded and five times mentioned in despatches. He saw active service again on the N.W. Frontier of India in 1919 and was appointed G.S.O.2, the War Office, in 1925. His last appointment was Brigadier, General Staff, Southern Command.

Colonel (temporary Brigadier) B. A. Hill, D.S.O., to be Major-General from 1st January, 1935.

Major-General Hill was commissioned from the R.M.A. in 1897, and was appointed Ordnance Officer 4th Class in 1908. He was an Assistant Professor at the R.N. College from 1903 to 1905. He went to Gallipoli in 1915, and was with the Egyptian Expeditionary Force from 1916 to 1918. He was promoted Ordnance Officer 1st Class in 1929, and has been Inspector of Army Ordnance Services, the War Office, since 1934.

Colonel (temporary Brigadier) the Viscount Gort, V.C., C.B.E., D.S.O., M.V.O., M.C., *p.s.c.*, to be Major-General from 25th November, 1935.

Viscount Gort joined the Grenadier Guards in 1905, and went to France with the B.E.F. in 1914. He was appointed G.S.O.3 in 1915, G.S.O.2 in 1916, G.S.O.1 in 1919, was wounded three times and received eight mentions in despatches. He was G.S.O.1 to the Shanghai Defence Force in 1927, and his last appointment was Director of Military Training, India.

General.

New Troopship.—The new troopship "Dilwara," which was launched in October, 1935, was built at Whiteinch by Barclay Curle and Company for the

British India Steam Navigation Company. She is motor driven and has a special plant for heating and ventilation, which will ensure, during extremes of climate, an even temperature. The standard of comfort is high, and the hospital accommodation is said to be excellent.

WAR OFFICE APPOINTMENT.—Sir Victor A. G. A. Warrender, Bt., M.C., M.P., Financial Secretary of the War Office, has appointed Sir Alfred L. Beit, Bt., M.P., to be his Parliamentary Private Secretary.

ROYAL TOURNAMENT, 1936.—The Royal Tournament for 1936 will be held at Olympia, West Kensington, London, from 7th to 23rd May, inclusive.

PROMOTION EXAMINATIONS.—The results are announced of the examination (in written subjects) of officers with a view to promotion in the Regular Army, Royal Marines, Supplementary Reserve, Territorial Army and Indian Army, which was held in Home stations in October last. In all 160 candidates were successful, including 74 lieutenants, 82 captains, and 4 majors (R.A.M.C.).

GILL MEMORIAL SCHOLARSHIPS AT BRIGHTON COLLEGE.—One or two Gill Memorial Scholarships and two Exhibitions, all at Brighton College, are offered for competition among sons of Army officers in 1936. Candidates must be under the age of 14 years on 1st June, 1936. Applications must reach the Under-Secretary of State (C.I.), the War Office, London, S.W.1, not later than 30th April, 1936.

ARMY DENTAL CORPS.—Applications are invited from dental surgeons for appointment to commissions in the Army Dental Corps. Candidates will be selected for commissions without undergoing competitive examination, and will be required to present themselves in London for interview and physical examination about the middle of January, 1936. They must be registered under the Dentists Acts or Medical Acts and be not over the age of 28 years. Full particulars of the conditions of service and emoluments, also form of application, may be obtained on request, either in writing or in person, to the Assistant Director-General, Army Medical Services (for the Dental Service), the War Office, London, S.W.1.

ARMY REORGANIZATION

The War Office announces the following important reorganizations in the Cavalry and Infantry, involving conversions of regiments of both arms :—

I. (*a*) The conversion of the existing Cavalry Division (which consists of two horsed brigades and divisional troops) and the Tank Brigade into a mechanized Mobile Division. The latter will consist of two mechanized cavalry brigades, each consisting of two motor cavalry regiments and one cavalry light tank regiment, the Tank Brigade, and divisional troops.

(*b*) The conversion of the Cavalry Brigade in Egypt into a mechanized formation consisting of one armoured car regiment, one motor cavalry regiment, and one cavalry light tank regiment.

Under this scheme the mechanized cavalry units will eventually be divided into three types : (i) cavalry armoured car regiments, (ii) motor cavalry regiments, and (iii) cavalry light tank regiments. The organization of the armoured car regiments will be unchanged ; that of the motor cavalry units will consist of headquarters, headquarter squadron, and three mechanized squadrons, each consisting of three troops of three sections ; and the cavalry light tank regiments will probably be equipped similarly to a light tank battalion of the Royal Tank Corps.

The regiments to be converted are :—1st King's Dragoon Guards ; The Queen's

Bays (2nd Dragoon Guards); 3rd The King's Own Hussars; 4th Queen's Own Hussars; 7th Queen's Own Hussars; 8th King's Royal Irish Hussars; 9th Queen's Royal Lancers; 10th Royal Hussars.

The order of precedence shown above will not be the order of conversion. The conversion will be undertaken in two stages: first, by completing the 2nd Cavalry Brigade at Tidworth and the brigade in Egypt; secondly, by mechanizing the 1st Cavalry Brigade at Aldershot. Dates are not yet settled. The cavalry regiments which are to remain horsed will be employed either as divisional or army troops, as circumstances require.

II. The conversion of the infantry battalions of the Regular Army into machine-gun battalions and rifle battalions, in order to provide infantry brigades consisting of three rifle battalions and one machine-gun battalion each. It has been decided to convert two battalions of Foot Guards and thirteen regiments of the Infantry of the Line into machine-gun units. The remaining Guards battalions and Line regiments will be "rifle" battalions. The organization of the machine-gun battalions has not yet been finally decided; but the intention is that these units, besides containing machine-gun companies, will contain anti-tank gun and mechanized reconnaissance companies. The rifle battalions will consist of:—one headquarter company, including a mortar platoon and a light machine-gun platoon; four rifle companies, each including four rifle platoons of three sections each. The rifle sections will be trained also in the use of the new light machine-gun.

The following units have been selected for conversion to machine-gun units:—

Foot Guards.—3rd Battalion The Grenadier Guards, and 3rd Battalion The Coldstream Guards.

Infantry of the Line.—The Royal Scots; The Royal Northumberland Fusiliers; The Royal Fusiliers; The Devonshire Regiment; The West Yorkshire Regiment; The Royal Scots Fusiliers; The Cheshire Regiment; The Royal Welch Fusiliers; The Gloucestershire Regiment; The East Surrey Regiment; The Middlesex Regiment; The Manchester Regiment; The Argyll and Sutherland Highlanders.

It is hoped to convert all battalions at home, with the exception of those due for service abroad, in the course of the winter of 1936–37. Battalions abroad will be converted later, and the reorganization will not be extended to India before 1939. The manner of applying this policy of reorganization to the Territorial Army is under consideration.

Object of the Reorganization.

The object of these two schemes of reorganization may be stated very briefly as follows:—

I. The Cavalry Division as hitherto organized lacks the speed, wide range of action, and striking power required of mobile troops under modern conditions of war, in which mechanized troops are employed. In addition, the Tank Brigade will require, under certain conditions, the co-operation of equally mobile troops who can act in areas and under conditions unsuitable to tanks. The proposed Mobile Division is so organized as to afford this co-operation.

II. The new organization for Infantry Brigades is aimed at the following objects:—

(1) To reduce the size of the Division, and to increase the proportion of supporting arms as compared with riflemen. If the reorganization of the Division were based on twelve infantry battalions of the existing

type, the provision of the necessary support would make this Division unwieldy and would involve the formation of new units.

(2) To obtain a better tactical co-ordination of infantry weapons.

By grouping certain supporting weapons and activities in a separate unit (the machine-gun battalion), they can be applied with greater economy, flexibility, and concentration.

(3) As a corollary to (2), to simplify the adoption of certain modern developments in armament and equipment within the infantry brigade. The armament and equipment of the infantry are becoming increasingly complex by the development of anti-tank guns, armoured machine-gun carriers, vehicles for motor reconnaissance, and so on. To distribute equipment of this nature in small quantities throughout all battalions would lead neither to economy nor to efficiency.

(4) To simplify the training of infantry and the supply of reinforcements in war.

Remarks and Comments.

These changes, which are both drastic and far-reaching, will, in a few years, completely alter the structure of the British Army, and may be regarded as the greatest development since Parliament passed the Ordinance of 15th February, 1645, creating the New Model Army. They fall naturally under two headings: the creation of the Mechanized Mobile Division and the formation of machine-gun battalions. Including the 11th Hussars and 12th Lancers, already converted, the total of mechanized cavalry regiments will be ten. The two Household Cavalry Regiments will keep their present organization. Five of the ten horsed regiments which remain will serve in India. The principles which have governed the selection of cavalry regiments for mechanization are understood to be as follows: apart from the Household Cavalry, whose duties do not permit of mechanization, it was decided to allow all those regiments which had previously been amalgamated to retain their present organization. In addition, The Royals and The Greys, as the two senior regiments of Cavalry of the Line, are to remain on a horsed basis. The remaining ten regiments are to be or have been already mechanized. Six of these will belong to the Mechanized Division. Three motorized regiments will serve in Egypt.

The reference in the *communiqué* to the weakness of the Cavalry Division " as hitherto organized " is obscure, as, of course, the Cavalry Division did not exist, in peace, as an organized formation. The position of cavalry light tank regiments is anomalous, as these units will be equipped similarly to a battalion of Royal Tanks, but will not belong to the latter Corps. Training and administrative difficulties are likely to occur, and it does not look as if this arrangement could prove to be anything but a temporary measure.

A comparison of the organization of the Mechanized Mobile Division with that of the Mechanized Division (*Kampfwagendivision*) advocated by the Austrian General of Artillery, Von Eimannsberger, is not without interest. General Von Eimannsberger has lately written a book on tank warfare, which has caused a considerable stir on the Continent, where he is regarded as a leading authority on this subject. The General suggests that the Division should include one brigade of *Chasseurs*, consisting of three battalions carried in lightly armoured track vehicles, one regiment of anti-tank guns (fifty-four guns), and two tank brigades. Divisional troops would include aircraft, field artillery, and one regiment of armoured cars. The chief differences between this organization and ours are that the *Kampfwagen-*

division has two tank brigades against our one, while we have four motorized regiments and two cavalry light tank regiments as opposed to three battalions of *Chasseurs*. When making this comparison, it should not be overlooked that our Mechanized Divisions may have to serve almost anywhere in the world, whereas the *Kampfwagendivision* is designed for continental warfare only.

As regards machine-gun battalions: a total of two Guards battalions and twenty-six Regular Infantry battalions are to be converted. The territorial distribution of selected Line regiments (each of two battalions) is: Home Counties, three; Lowlands, two; Lancashire, two; Yorkshire, one; Highlands, one; Northumberland, one; Midlands, one; Wessex, one; and Wales, one—total, thirteen. Twenty-eight machine-gun battalions, of which fifteen will be required for the five divisions of the Expeditionary Force, and eight for India, should be adequate. Rifle battalions do not include heavy anti-tank guns, but they will be armed, as announced lately in the House of Commons, with the new light anti-tank weapon.

Continental ideas on the organization of infantry are, again, different and favour the inclusion in each infantry battalion of one company of six heavy anti-tank guns. The subdivision of anti-tank armament into heavy and light seems, however, to be fundamentally sound, as it is essential that small detached bodies of infantry should, if attacked suddenly by light tanks, be in possession of a light anti-tank weapon. The help of the heavy anti-tank company of the machine-gun battalion, which may not be within reach or may be engaged elsewhere, cannot always be relied upon. Recruiting for mechanized cavalry and machine-gun battalions should be greatly stimulated. The youth of to-day is whole-heartedly for mechanization, and the most popular exhibit for young people is a model aeroplane or a mechanical vehicle. The time-expired soldier of a mechanized unit should find it easy to secure a good billet in civil life. But whether the same applies to the men of non-mechanized rifle battalions remains to be seen.

The reasons for the changes in infantry organization are given fairly fully in the War Office Memorandum. To reduce the size of the Division is stated to be the first object, but it seems curious that the opportunity was not taken either to cut down rifle battalions to three companies or to contract the Division to two brigades of four battalions each. Whether the new Division is not still too big, in view of the potentialities of enemy air action, is a question that will best be answered in the stern school of war. The reasons given for the better tactical co-ordination of infantry weapons by the grouping of specialist armaments in a machine-gun unit are overwhelming. The reorganization of battalions at home will not be completed before 1937, and of battalions in India before 1939. This is a long way ahead, and it is greatly to be hoped that the international situation will return to "set fair" and that we shall be left in peace until then to put our military house in order. Reorganization, however, is largely, though not entirely, a matter of finance, and if world tension does not show any signs of decrease, the *tempo* can be accelerated. Our financial situation is now fully equal to any reasonable strain that can be put upon it, and is certainly not inferior to that of our possible rivals.

TERRITORIAL ARMY

1ST ANTI-AIRCRAFT DIVISION.

Consequent upon the expansion of the Anti-Aircraft defences of the London Area, the Army Council have decided to reorganize the existing system of command

and administration. This is necessary in order to provide better facilities for co-operation with the Royal Air Force and to ensure that training arrangements can be made to the best advantage of all concerned. The organization now known as " Air Defence Formations, Territorial Army," will, therefore, be abolished and the " 1st Anti-Aircraft Division, Territorial Army," formed in its place. This Division will at the outset consist of four Anti-Aircraft Groups, to which at a later date will be added such ancillary services as may be necessary. Each group will be generally larger than an infantry brigade, and will contain anti-aircraft units of the Royal Artillery and the Royal Engineers. The Headquarters of the 1st Anti-Aircraft Division will be accommodated at the Headquarters of the Fighting Area, Royal Air Force, Hillingdon House, Uxbridge, Middlesex, and the Headquarters of each Group will also be in close touch with the Royal Air Force formation with which it will co-operate. This organization came into force on 15th December, 1935.

The composition of the 1st Anti-Aircraft Division is as follows :—

Headquarters consisting of : Divisional Headquarters; Air Defence Formation Signals (to be reorganized shortly into 1st Anti-Aircraft Divisional Signals).

26th (London) Anti-Aircraft Group.

51st (London) Anti-Aircraft Brigade, R.A.
52nd (London) Anti-Aircraft Brigade, R.A.
53rd (City of London) Anti-Aircraft Brigade, R.A.
54th (City of London) Anti-Aircraft Brigade, R.A.
26th (London) Anti-Aircraft Searchlight Battalion (London Electrical Engineers).
27th (London) Anti-Aircraft Searchlight Battalion (London Electrical Engineers).

27th (Home Counties) Anti-Aircraft Group.

4th City of London Regiment (The Royal Fusiliers). *Role :* An Anti-Aircraft Brigade, R.A.

Surrey Group, Anti-Aircraft Searchlight Companies, R.E.

6th City of London Regiment (City of London Rifles). *Role :* An Anti-Aircraft Searchlight Battalion, R.E.

20th London Regiment (The Queen's Own). *Role :* An Anti-Aircraft Searchlight Battalion, R.E.

21st London Regiment (First Surrey Rifles). *Role :* An Anti-Aircraft Searchlight Battalion, R.E.

28th (Thames and Medway) Anti-Aircraft Group.

55th Anti-Aircraft Brigade, R.A.; 58th (Kent) Anti-Aircraft Brigade, R.A.; 11th London Regiment (Finsbury Rifles). *Role :* An Anti-Aircraft Brigade, R.A.

Essex Group. Anti-Aircraft Searchlight Companies, R.E.

Kent and Middlesex Group. Anti-Aircraft Searchlight Companies, R.E.

7th City of London Regiment (Post Office Rifles). *Role :* An Anti-Aircraft Searchlight Battalion, R.E.

29th (East Anglian) Anti-Aircraft Group.

7th Battalion The Essex Regiment. *Role :* An anti-Aircraft Brigade, R.A.

19th London Regiment (St. Pancras). *Role :* An Anti-Aircraft Searchlight Battalion, R.E.

A new Anti-Aircraft Searchlight Battalion, R.E. *Note.*—To be raised in Middlesex.

Note.—The titles to be borne by the converted units will be announced later.

AMALGAMATION OF LONDON DIVISIONS.

As a result of the conversion of seven infantry battalions of the 56th (1st London) and 47th (2nd London) Divisions to Anti-Aircraft units, the Army Council have decided to amalgamate these two Divisions to form " The London Division," consisting of three Infantry Brigades and Divisional Troops. The Headquarters of " The London Division " will be at Finsbury Barracks, City Road, E.C.1, and the location of the Headquarters of the Infantry Brigades will remain the same as the present Headquarters of the Infantry Brigades of the 56th (1st London) Division. The remaining units of the 56th and 47th Divisions not included in " The London Division " will be attached to that Division for training and administration until they can be absorbed into other formations.

The formation of " The London Division " took effect from 15th December, 1935.

Composition of the London Division.

Headquarters at Finsbury Barracks, City Road, E.C.1.

1st (London) Infantry Brigade.

Headquarters at Regimental Headquarters, Grenadier Guards, Birdcage Walk, S.W.1.

1st City of London Regiment (The Royal Fusiliers); 2nd City of London Regiment (The Royal Fusiliers); 3rd City of London Regiment (The Royal Fusiliers); 10th London Regiment (Hackney).

2nd (London) Infantry Brigade.

Headquarters at Finsbury Barracks, City Road, E.C.1.

Honourable Artillery Company (infantry battalion); 5th City of London Regiment (London Rifle Brigade); 15th London Regiment (Princess Louise's Kensington Regiment); 14th London Regiment (London Scottish).

3rd (London) Infantry Brigade.

Headquarters at Regimental Headquarters, Scots Guards, Birdcage Walk, S.W.1.

9th London Regiment (Queen Victoria's Rifles); 12th London Regiment (Rangers); 17th London Regiment (Tower Hamlets Rifles); 18th London Regiment (London Irish Rifles).

Divisional Troops.

Royal Artillery.—90th Field Brigade; 63rd Field Brigade; 64th Field Brigade.

Royal Engineers.—47th Divisional Engineers. (To assume title of " The London Divisional Engineers.")

Royal Corps of Signals.—56th Divisional Signals. (To assume title of " The London Divisional Signals.")

Royal Army Service Corps.—47th Divisional Royal Army Service Corps. (To assume title of " The London Divisional Royal Army Service Corps.")

Royal Army Medical Corps.—167th Field Ambulance.

Royal Army Ordnance Corps.—47th Divisional Royal Army Ordnance Corps. (To assume title of " The London Divisional Royal Army Ordnance Corps.")

SUMMER CAMP ATTENDANCE.—The *Daily Telegraph* Challenge Cup, awarded annually in the Territorial Army for the best attendance at camp, has been won this year by the 10th Battalion The Manchester Regiment, with an attendance of 100.33 per cent. of establishment. This figure is due to the unit having a strength in camp slightly in excess of establishment, but this has had no bearing on the result of the competition. The 10th Battalion The Manchester Regiment won the Cup last year, and it has now been won for five successive years by an Infantry unit, if the year 1932, in which there were no Territorial Army camps, is excluded. The Cup has been won on four occasions by a unit with an attendance of 100 per cent.

INDIA

The following appointments and promotions are announced :—

COMMANDER-IN-CHIEF.—General Sir Robert A. Cassels, G.C.B., C.S.I., D.S.O., *p.s.c.*, Colonel, 7th Light Cavalry, is appointed Commander-in-Chief in India from 30th November, 1935.

General Cassels joined the 32nd Lancers (I.A.) in 1901, and was appointed Brigade Major in 1909, and G.S.O.2 in 1911. He served in Mesopotamia from 1915 to 1919, receiving nine mentions in despatches, and held the appointments of G.S.O.1, 3rd Corps ; G.S.O.1, the Cavalry Division ; Commander, 3rd Cavalry Brigade, and G.O.C., 18th Division. He was appointed Major-General of Cavalry, India, in 1920, District Commander in 1923, and G.O.C.-in-Chief, Northern Command, in 1930. He has been A.D.C.-General to the King, and was Acting Commander-in-Chief in 1933.

Major-General Sir H. B. D. Baird, K.C.B., C.M.G., C.I.E., D.S.O., G.O.C.-in-Chief, Eastern Command, Colonel, 4th Battalion 5th Mahratta Light Infantry, to be Lieutenant-General.

Lieut.-General Sir Walter S. Leslie, K.C.B., K.B.E., C.M.G., D.S.O., *p.s.c.*, A.D.C., to be General, from 30th November, 1935.

Major-General A. M. Mills, C.B., D.S.O., to be Colonel, 4th Prince of Wales's Own Gurkha Rifles.

Colonel (temporary Brigadier) C. J. E. Auchinleck, C.B., D.S.O., O.B.E., *p.s.c.*, to be Major-General and to command the Kohat District, from 26th October, 1936.

Major-General Auchinleck joined the Indian Army from the Unattached List in 1903. He saw active service in Egypt and Aden from 1914 to 1915 ; Mesopotamia, 1916 to 1918 ; Southern Kurdistan, 1919 ; and N.W. Frontier of India, 1933. He has held the appointments of Brigade Major, 1917 ; G.S.O.2, 1919 ; A.Q.M.G., 1923 ; and Instructor at the Staff College, 1930. He has received five mentions in despatches, and his last appointment was Commander, The Mohmand Field Force, 1935.

Colonel A. W. M. Harvey, M.B., I.M.S., to be Major-General, from 24th November, 1935.

Major-General Harvey joined the I.M.S. in 1903, and served in France from 1914 to 1915, and Mesopotamia from 1916 to 1918. He was appointed Honorary Surgeon to the King in 1933, and has lately been officiating D.D.M.S., Northern Command, Rawalpindi.

WIRELESS.—No. 1 W/T Sets now form the standard equipment of all Infantry Brigade signal sections. Their introduction into Cavalry Brigade signal troops is under consideration.

WEB EQUIPMENT.—New pattern web equipment has been designed for Cavalry, and is now under trial at Sialkot by certain units of 2nd Cavalry Brigade.

COLLECTIVE TRAINING.—The 3rd (Indian) Division held, during December, 1935, an exercise on defence and the use of smoke.

The 7th and 8th (Indian) Infantry Brigades, 23rd Mountain Brigade, R.A., and certain other R.A. units took part. Four days' collective training under the direction of General Sir Norman Macmullen, G.O.C.-in-Chief, Eastern Command, followed.

The 3rd (Indian) Divisional Signals, 19th (K.G.O.) Lancers and 2nd Battalion The Green Howards were included in the second phase.

SMOKE GRENADES.—A new smoke grenade has been evolved, and extensive trials have taken place. The habit of using smoke as an infantry weapon is to be largely developed.

VICKERS GUNS.—Machine-gun troops have been restored to H.Q. wings of Cavalry regiments, and the Headquarter troop will consist of four Vickers machine guns. Sabre troops will continue to include in their armament the Vickers-Berthier light gun.

STRETCHERS.—Collapsible stretchers are to be introduced into Cavalry regiments at the scale of sixteen per regiment. Farriers will act as stretcher bearers.

MAINWARING SADDLE.—The 3rd Cavalry Brigade, Meerut, are carrying out exhaustive trials of a new pattern saddle, invented by Lieut. H. S. K. Mainwaring, 10th Royal Hussars.

INDIAN SIGNAL CORPS.—Gentlemen cadets from the Indian Military Academy who are selected for posting to Indian Signals will, on being commissioned, undergo a post-graduate course for a period of eighteen months at the Signal Training School, Jubbulpore, and, for three months, a qualifying course at the Army Signal School.

COMBINED MANŒUVRES.—During December, 1935, combined operations involving the three Services were held in Bombay. A state of war was supposed to have arisen and the defences of the port were placed on a war footing. The Examination Service was mobilized and all vessels entering the harbour were challenged. Lieut.-General Sir William Bartholomew—Chief of the General Staff, Lieut.-General Sir Ivo Vesey—G.O.C.-in-Chief, Southern Command, and Major-General Viscount Gort—Director of Military Training, controlled the exercises. H.M.I.S. "Indus" (Commander E. M. Bayfield) and "Cornwallis" (Commander P. H. Learmont) represented enemy cruisers, and detachments of 3rd Battalion 8th Punjab Regiment acted as hostile landing parties. Raids were delivered against Salsette Island and the oil tanks at Sewri. The Light Motor Patrol, Bombay Auxiliary Force, was called out, and performed valuable service.

Units of the R.A.F. co-operated, and at the conclusion of the exercises, at Mirve, on the outskirts of Bombay, before a large gathering of over 100 officers, a flight of planes gave a fine exhibition of aerial bombing.

THE UNITED SERVICE INSTITUTION OF INDIA, SIMLA.—The Council has chosen the following subject for the Gold Medal Prize Essay Competition for 1936:—

"Certain conflicting requirements may be observed between the organization of the Army at Home and in India, owing to differences in the tasks of

these forces. Keeping in mind the importance of the principle of standardization of training and organization in the Imperial forces, discuss the problems involved."

Details of the competition will be found in the *Journal of the U.S.I. of India* for October, 1935, or may be obtained on application to the Secretary, United Service Institution of India, Simla, India.

Farewell Order.

Field-Marshal Sir Philip Chetwode, Bart., G.C.B., G.C.S.I., K.C.M.G., D.S.O., late Commander-in-Chief in India, has issued the following farewell order: "To-day I conclude my active career as a soldier and leave India. I take with me a great affection and admiration for the Naval, Army and Air Forces in India, among whom I have spent the last seven years. I wish everyone in them all honour in war and good fortune and happiness in time of peace."

FRANCE

Mechanized Army Manœuvres.—In view of the recent changes in the organization of the British Army, and the formation of the Mechanized Mobile Division, the exercises held in September, 1935, in Champagne are of special interest to British readers. The *Revue Militaire Suisse* for September and the *Bulletin Belge des Sciences Militaires* for December, 1935, give a good account. The Division *légère motorizée* (D.L.M.), the old fourth Cavalry Division, commanded by General Villemont, appeared on large-scale manœuvres for the first time. This formation corresponds generally to our new mechanized division. As it is a new organization, and as experience in its use is lacking, its role has not yet been clearly defined. Present-day ideas in France suggest that the D.L.M. should act, in co-operation with the Air Force, as the strategical advanced guard of an Army. Its special tasks will probably be to reconnoitre in front and flanks, to seize important tactical features in advance of the main army, to co-operate with the main forces in battle, and possibly to carry out raids on the enemy's communications. This last role is highly controversial. General Camon, writing in *La France Militaire* for September and October, 1935, is strongly in favour of attacks against the enemy's back areas and industrial nerve centres by means of distant raids by mechanized forces. On the other hand, to launch the D.L.M. on such raids would, according to M. Robert Poulaine of the *Temps*, be a serious error. The Division is, he says, very costly and is manned by a *Corps d'élite*. Its petrol supply, while acting unsupported behind the enemy's lines, would be a matter of extreme difficulty, and its extrication at the end of a raid a most hazardous operation. The Army, by its loss or destruction, would suffer a very serious blow. Many leading authorities have argued the question whether mobile forces should be employed on raids or not, but no solution to the problem has yet been found. The answer probably is that it depends on the particular circumstances of each case.

The Division *légère motorizée* (D.L.M.) is organized in four groups: (*a*) the reconnaissance group, consisting of light and very mobile units, whose tasks are reconnaissance of the enemy and the ground in front and on the flanks, and the protection of the division from surprise; (*b*) the striking group, including heavy and light tank units; (*c*) the consolidation group, consisting of motorized cavalry in track vehicles or on motor cycles; (*d*) the artillery, engineers and services group: all mechanized. Motor vehicles of many different kinds, heavy and light tanks, lorries and motor cycles, with or without side-cars, are included. Our Mechanized

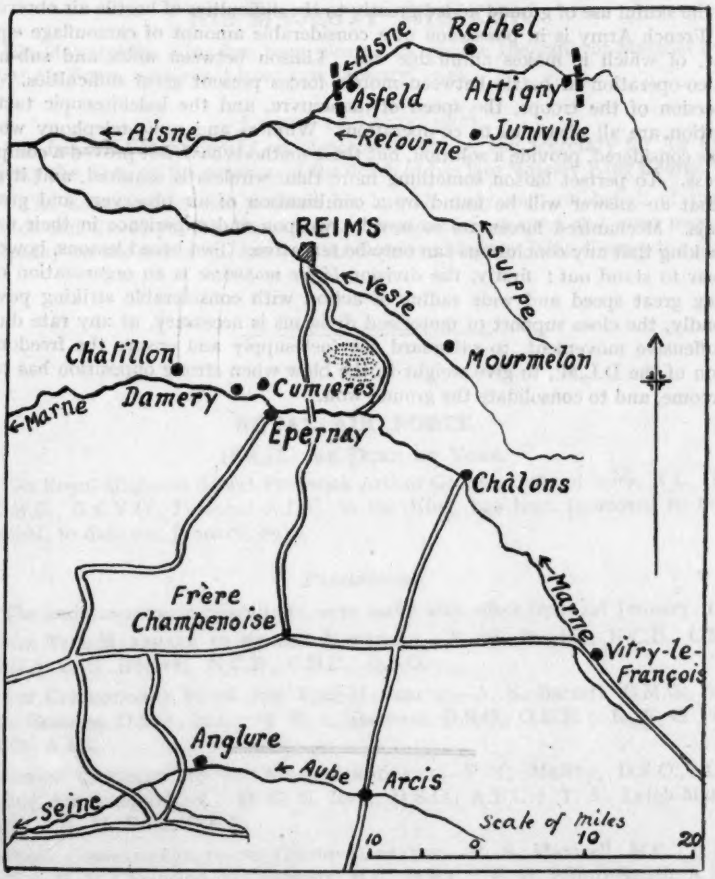
Mobile Division is, however, organized differently. One tank brigade and two mechanized cavalry brigades, each of two motor cavalry regiments and one light tank regiment, form the components. While the separate tank group is common to both the French and British organizations, our two mechanized cavalry brigades, each with their own light tanks, lorries and light cars, contain within themselves elements of all three groups: reconnaissance, fighting, and consolidation. The British organization seems to be less logical than the French, but will, no doubt, suit our characteristics and work well in practice. When formed, the division will be thoroughly tested on manœuvres and, if experience shows it to be necessary, changes can be made.

Northland, with one mobile division (not a D.L.M.), invaded Southland and having reached the general line of the River Marne, was held up. The 51st, 67th and 91st Infantry Regiments—each of three battalions, in lorries—the 42nd Regiment of Artillery (tractor-drawn), heavy artillery, tanks, one brigade of Spahis and elements of motor cavalry formed Northland's mobile division. To dispute in succession the lines of the five rivers, Marne, Vesle, Suippe, Retourne and Aisne, and to hamper and delay the counter-offensive prepared by the superior forces of Southland, was its task. Southland disposed of two divisions, the D.L.M., and the 12th Mobile Division. This latter consisted of three infantry regiments, 106th, 150th, and 8th Zouaves (all transported in lorries), the 25th Artillery Regiment, some Corps Artillery and tanks. One squadron of aircraft was allotted to each side for Army co-operation tasks. Powerful air forces, moreover, were employed, first on one side and then on the other, to bring about unexpected situations according to the wishes of the Directing Staff. Southland's role was to force in succession the lines of the five rivers, to drive back the invaders as quickly as possible and expel them from the soil of France. River lines, in these manœuvres, were very prominent. Water obstacles will, with the development of mechanized warfare, assume much greater importance than heretofore and may, in defensive warfare, play a part comparable to the walled towns and castles of medieval days. The improvement of the amphibious tank and its inclusion as an element of mechanized forces seems, therefore, to be an urgent necessity. The action of air forces has been only lightly touched on in these notes, not because their effect was slight, but because the subject, to do it justice, really merits an article to itself.

By 7 p.m. the D.L.M., which had advanced from the Aube four hours previously and had covered a distance of about forty miles, reached the Marne. Finding the bridge at Epernay "destroyed," the division crossed the Marne at Cumières and Damery and, pushing back Northland advanced elements, reached the line of the Vesle. Further progress by mechanized forces acting alone was impossible, and the G.O.C. Southland accordingly entrusted the task of forcing the passage to the 12th Mobile Division. This formation, supported by the tank group of the D.L.M., delivered, at first light on 4th September, a successful attack on Northland troops and secured the river line. Northland tanks massed under cover in the forest of Nogent l'Abesse were surprised by the speed of the advance and overrun. The forward movement of the D.L.M. on 2nd September from the Aube to the Marne affords a good example of mechanized mobility. The speed of advance, including halts for reconnaissance and liaison, averaged about ten miles per hour. The frontage covered by the division extended roughly to thirty miles. The 12th Mobile Division, moreover, consisting of nine infantry battalions with full armament and equipment, motored during the night 2nd–3rd September sixty miles in eight hours. The price of mechanized mobility is high, and the petrol consumption of the D.L.M. amounts to over 300 gallons per mile. The limitations of the division are also brought out

by these operations: successful in forcing the lightly held crossings of the Marne, the formation is checked on the Vesle and requires the support of mechanized infantry.

The second phase of the manœuvres pursued, generally speaking, a similar course to the operations of the first phase. Southland pushed the invaders back over the



Suippe and Retourne, only to be finally checked by Northland on the heights of the Aisne. Northland tanks of modern type, hidden in the woods, and opposing Southland's advance, made a sudden counter-stroke against the tank group of the D.L.M. This attack, which came as a surprise, was adjudged to be successful. As a result of the practice gained in the first phase, the commanders of all mechanized formations handled their units in the second phase with greatly increased skill and confidence. Although this result is only to be expected, it contains, nevertheless, an important lesson for ourselves. Mechanized manœuvres are expensive, much

more so than ordinary manœuvres, and there may be a tendency, in order to save money, to hold them infrequently or to cut them short. Army manœuvres have been held in this country only once in ten years, while, as Captain Kennedy points out in his book, *This, Our Army*, even the relatively small sums allotted for annual training are rarely fully expended. Camouflage, according to Press reports, was extremely well done. The wide dispersion practised by units and formations and the skilful use of ground added greatly to the difficulties of hostile air observers. The French Army is in possession of a considerable amount of camouflage equipment, of which it makes admirable use. Liaison between units and sub-units and co-operation in battle between mobile forces present great difficulties. The dispersion of the troops, the speed of manœuvre, and the kaleidoscopic tactical situation are all obstacles to co-operation. Wireless and radio-telephony would, it was considered, provide a solution, but these methods have not proved a complete success. To perfect liaison something more than wireless is required, and it may be that an answer will be found by a combination of air observers and ground signals. Mechanized forces are so novel a weapon and experience in their use is so lacking that any conclusions can only be tentative. Two broad lessons, however, appear to stand out: firstly, the division *légère motorizée* is an organization combining great speed and wide radius of action with considerable striking power; secondly, the close support of motorized divisions is necessary, at any rate during an offensive movement, to safeguard the fuel supply and ensure the freedom of action of the D.L.M., to give weight to the blow when strong opposition has to be overcome, and to consolidate the ground won.

AIR NOTES

HIS MAJESTY THE KING

His Majesty the King has been pleased to assume the rank of Marshal of the Royal Air Force, with effect from 21st January, 1936.

LETTER OF CONDOLENCE.

The following Message of Condolence was sent by the Secretary for Air to His Majesty the King on the occasion of the death of His late Majesty King George V :—

"The Secretary for Air presents his humble duty and, on behalf of the Air Council and the Royal Air Force, begs to tender their deepest and most respectful sympathy on the lamented death of his Gracious Majesty King George the Fifth."

ROYAL AIR FORCE

H.R.H. THE DUKE OF YORK.

His Royal Highness Albert Frederick Arthur George, Duke of York, K.G., K.T., G.C.M.G., G.C.V.O., Personal A.D.C. to the King, has been promoted to be Air Marshal, to date 1st January, 1936.

PROMOTIONS.

The undermentioned promotions were made with effect from 1st January, 1936 :

AIR VICE-MARSHALS TO BE AIR MARSHALS.—F. W. Bowhill, K.C.B., C.M.G., D.S.O. ; C. S. Burnett, K.C.B., C.B.E., D.S.O.

AIR COMMODORES TO BE AIR VICE-MARSHALS.—A. S. Barratt, C.M.G., M.C. ; E. L. Gossage, D.S.O., M.C. ; J. E. A. Baldwin, D.S.O., O.B.E. ; R. E. C. Peirse, D.S.O., A.F.C.

GROUP CAPTAINS TO BE AIR COMMODORES.—P. C. Maltby, D.S.O., A.F.C. (Acting Air Commodore) ; D. C. S. Evill, D.S.O., A.F.C. ; T. L. Leigh-Mallory, D.S.O. ; R. H. Peck, O.B.E.

WING COMMANDERS TO BE GROUP CAPTAINS.—R. S. Maxwell, M.C., D.F.C., A.F.C. ; H. V. Champion de Crespigny, M.C., D.F.C. ; C. H. Elliott-Smith, A.F.C. ; J. C. Russell, D.S.O. ; A. R. Arnold, D.S.C., D.F.C. ; A. Gray, M.C. ; R. Graham, D.S.O., D.S.C., D.F.C. ; R. D. Oxland, O.B.E. ; H. P. Lale, D.S.O., D.F.C. ; R. L. G. Marix, D.S.O. ; E. J. P. Burling, D.S.C., D.F.C., A.F.C. ; L. F. Forbes, M.C. ; A. L. Gregory, M.B.E., M.C.

MEDICAL BRANCH.

AIR COMMODORE TO BE AIR VICE-MARSHAL.—A. W. Iredell, M.R.C.S., L.R.C.P., K.H.P.

Honours and Awards.

The following honours and rewards were published in the *London Gazette* dated 1st January, 1936 :—

K.C.B. (Mil.).—Air Marshals F. W. Bowhill, C.B., C.M.G., D.S.O., and C. S. Burnett, C.B., C.B.E., D.S.O.

C.B. (Mil.).—Air Vice-Marshal H. M. Cave-Browne-Cave, D.S.O., D.F.C., and Air Commodore N. J. Gill, C.B.E., M.C.

C.B.E. (Mil.).—Group Captain T. E. B. Howe, A.F.C.

Air Force Cross.—Squadron Leader A. H. Paull; Flight Lieutenant C. McC. Vincent, D.F.C.; Flight Lieutenant E. G. H. Russell-Stracey.

The following rewards in recognition of gallant and distinguished service, in action, in connection with the recent Mohmand operations on the North-West Frontier of India, 1935, were published in the *London Gazette* dated 24th December, 1935 :—

D.F.C.—Flying Officer W. D. Anderson.

Appointments.

The following appointments have taken effect as from the dates shown :—

Air Vice-Marshal.—A. S. Barratt, C.M.G., M.C., to R.A.F. Staff College, Andover, as Commandant, to date 1st January, 1936.

Air Vice-Marshal W. R. Freeman, C.B., D.S.O., M.C., to be Air Member for Research and Development on the Air Council, with effect from 1st April, 1936, vice Air Marshal Sir H. C. T. Dowding, K.C.B., C.M.G.

Air Commodores.—O. T. Boyd, O.B.E., M.C., A.F.C., to Headquarters, Central Area, as Air Officer Commanding, to date 1st November, 1935; W. S. Douglas, M.C., D.F.C., to Air Ministry, as Director of Staff Duties, to date 1st January, 1936.

Group Captains.—P. Babington, M.C., A.F.C., to Air Ministry, as Director of Postings, to date 1st January, 1936; C. C. Darley, C.B.E., A.M., to No. 10 Flying Training School, Ternhill, in Command, to date 1st January, 1936; D. Harries, A.F.C., to Royal Air Force Station, Amman, Palestine, in Command, to date 11th October, 1935; C. H. Nicholas, D.F.C., A.F.C., to Headquarters, Fighting Area, Uxbridge, for Air Staff duties, to date 4th December, 1935; F. L. Robinson, D.S.O., M.C., D.F.C., A.D.C., to No. 2 Flying Training School, Digby, in Command, to date 11th November, 1935; A. Shekleton, D.S.O., O.B.E., to No. 7 Flying Training School, Peterborough, in Command, to date 16th December, 1935.

Retirements.

Air Vice-Marshal.—R. P. Mills, C.B., M.C., A.F.C., at his own request.

Air Commodore.—C. E. H. Rathbone, C.B., D.S.O., at his own request.

Group Captains.—I. G. V. Fowler, A.F.C.; S. Smith, D.S.O., A.F.C., at their own request.

Royal Air Force Expansion.

The expansion of the Royal Air Force announced by the Government in May, 1935, is proceeding according to schedule, and the following gives a general indication of the progress to date :—

New Squadrons.—Details of the formation of new squadrons are given under the heading "Organization."

New Stations.—In addition to those reported in last quarter's Notes, two further sites at Dishforth and Lecopfield, Yorkshire, have been acquired, bringing the number of new stations up to twenty-two.

Recruitment :—

(i) *Pilots.*—Up to date, rather more than 900 applicants have been accepted for service, either as short service officers or airman pilots, leaving approximately a further 900 to be accepted to complete the scheme by 31st March, 1937.

(ii) *Airmen.*—A steady flow of recruits in the various trade groups is being maintained, over 9.000 applicants having now been accepted. A further 2,800 tradesmen are required by 31st March, 1936, to complete the first year's programme.

Flying Training Schools.—During the period under review, courses of instruction on service type aircraft have commenced at two of the new service flying training schools. The first course assembled at No. 11 Flying Training School, Wittering, on the 4th November, 1935, and the other at No. 7 Flying Training School, Peterborough, on 6th January, 1936, pupils having previously undergone a period of *ab-initio* training, including 50 hours dual and solo flying, at one of the civil flying schools, followed by a disciplinary course at the Royal Air Force Depot, Uxbridge.

Initial courses at service flying training schools extend over a period of three months and are followed by an advanced course of approximately three months duration before pilots are posted to Squadrons for flying duties.

Ab-initio Training.—*Ab-initio* training of new pilots has been carried out at the civil flying schools at Hanworth, Filton, Hatfield, White Waltham, Sywell, Hamble, Brough, Reading, and Desford during the past quarter.

Organization.

New Squadrons.—The following new Squadrons under the Royal Air Force Expansion Scheme commenced formation on the dates shown and have been placed under the Command of the Air Officer Commanding-in-Chief, Air Defence of Great Britain, in the Central Area :—

Unit.	*Station.*	*Date.*
No. 21 (Bomber) Squadron	Bircham Newton	3.12.35.
„ 34 „ „	„ „	3.12.35.
„ 104 „ „	Abingdon	7. 1.36.

These squadrons will be equipped with light bomber type aircraft.

The three additional Auxiliary Air Force Squadrons provided for in the scheme were due to commence formation on the 10th February, 1936, as under, and will from part of No. 1 Air Defence Group of the Air Defence of Great Britain :—

No. 609 (West Riding) Bomber Squadron at Yeadon Aerodrome.
„ 610 (County of Cheshire) Bomber Squadron at Hooton Park Aerodrome.
„ 611 (West Lancashire) Bomber Squadron at Speke Air Port.

The above bring the number of new squadrons formed since the inception of the Expansion Scheme up to thirteen, *i.e.*, ten Regular and three Auxiliary, the previous regular squadrons being :—

No.	38	..	..	(Bomber).
,,	48	..	..	(General Reconnaissance).
,,	74	..	..	(Fighter).
,,	97	..	..	(Bomber).
,,	102	..	..	(Bomber).
,,	214	..	..	(Bomber).
,,	215	..	..	(Bomber).

SCHOOL OF AIR NAVIGATION.—The Air Navigation School, Andover, and the Navigation School, Calshot, have moved to Manston and reformed as the School of Air Navigation. The School of Air Navigation will undertake the conduct of all air navigation courses, including the Specialist "N" course. It will also be responsible for the air navigation and reconnaissance training of pilots for the general reconnaissance and flying boat squadrons.

The School will come under the Air Officer Commanding, Inland Area, for administration and directly under the Air Ministry (Director of Training) for training.

AIR OBSERVERS SCHOOL.—The Air Observers School formed at North Coates Fitties on 1st January, 1936. The School will undertake the conduct of courses for:—(i) Air Observers; (ii) Air Gunners; (iii) Telegraphist Air Gunners.

The School is placed under the command of the Air Officer Commanding, Inland Area, for administration, and under the Air Officer Commanding, Armament Group, for training.

MOVEMENTS.—No. 48 (General Reconnaissance) Squadron has moved from Bicester to Manston, and is placed under the Officer Commanding, School of Air Navigation, for all purposes.

No. 18 (Bomber) Squadron has moved from Upper Heyford to Bircham Newton.

Nos. 58 and 215 (Bomber) Squadrons have moved from Worthy Down to Upper Heyford, and remain under the command of the Air Officer Commanding, Western Area.

PERSONNEL.

IMPERIAL DEFENCE COLLEGE.—The following officers were selected to attend the course at the Imperial Defence College commencing in January, 1936:—

Group Captain R. Graham, D.S.O., D.S.C., D.F.C.
Wing Commander H. A. Whistler, D.S.O., D.F.C.
,, ,, J. L. Vachell, M.C.
,, ,, B. J. Silly, M.C., D.F.C.
Squadron Leader R. S. Sorley, D.S.C., D.F.C.

EXCHANGE OF OFFICERS—DOMINION CO-OPERATION.—Air Commodore H. R. Nicholl, C.B.E., who had been Air Officer Commanding, Central Area, Royal Air Force, since March, 1934, proceeded to Australia on the 9th November, 1935, to serve with the Royal Australian Air Force as a member of the Air Board for a period of two years.

Air Commodore S. J. Goble, C.B.E., D.S.O., D.S.C., of the Royal Australian Air Force, who arrived in this country early in December, will be posted for duty at the Air Ministry as Deputy Director of Operations for the same period.

PASSING OUT INSPECTIONS.—The Passing Out inspection of Flight Cadets from the R.A.F. College, Cranwell, was carried out by Air Marshal Sir A. M. Longmore, K.C.B., D.S.O., Air Officer Commanding, Coastal Area, on 13th December, 1935.

His Majesty the King's Medal, presented to the Flight Cadet who obtains the highest aggregate of marks in all subjects in the final order of merit following the passing-out inspection, was awarded to Flight Cadet Corporal P. J. K. Pike, and the Sword of Honour, presented to the best all round Flight Cadet in the Senior Term, was awarded to Flight Cadet Under Officer M. P. Skinner.

Of the twenty Flight Cadets who passed out, five have been posted to Fighter Squadrons, six to Bomber Squadrons, six to Army Co-operation Squadrons, four to Flying Boats, and three to Torpedo Bombers.

781 Flight Cadets have now graduated since the formation of the College.

ATTACHMENT OF FOREIGN OFFICERS.—Captain Arimori of the Japanese Military Air Service was attached to the R.A.F. Station, Abingdon, from 12th November to 9th December, 1935. Lieutenant Afkhami of the Iranian Air Force is undergoing the Instructors Course at the Central Flying School which commenced 13th January, 1936.

WAR RECORDS OF SQUADRONS.

Air Ministry Order (A.291 of 1935) states that: in order to foster *esprit de corps*, it has been decided to supply squadrons which took part in the War of 1914-18 with some official reminder of the part they played. In view of this decision, each squadron to whom it applies will be presented with a document (in original, if available) relating to some noteworthy achievement or item of historical or other interest concerning the work of the squadron during the War period. The intention of the Air Council is that this document, when presented, should be suitably framed and displayed in a place to be selected by the squadron commander.

It is pointed out that many of the documents are of considerable historical value and, in order to ensure that their preservation is safeguarded to the maximum degree possible, each document is being mounted and sealed within sheets of glass by the British Museum authorities.

There is a possibility that some squadrons may feel that the documents they receive inadequately represent the outstanding features of their War records. It must, however, be appreciated that many of the original records are, for various reasons, no longer available, and that, in these circumstances, search has been necessarily restricted to the official documents in the custody of the Air Historical Branch.

OVERSEAS COMMAND

ADEN.

MARQASHI OPERATIONS.—For some months the Marqashi subsection of the Fadhli tribe was at feud with the Fadhli Sultan over the question of taxes and other tribal affairs. During this period various incidents occurred culminating at the beginning of November in a move of about a hundred Marqashis from their houses, East of Shuqra—the Fadhli capital, to the Abyan district where they occupied the ruined village of Al Asala which commands one of the main trade routes.

On the morning of 15th November letters were dropped urging them to keep the peace, but later in the same day a clash occurred between them and some of the Sultan's men, four of whom were killed. The Marqashis also fired on a car returning to Aden from Shuqra.

As a result of these incidents, the Fadhli Sultan asked for air co-operation to help in subduing the Marqashis and restoring peace on the trade routes. As it was of great political importance to support him and to remove the threat to the main North-Eastern trade route from Aden, it was arranged that he should surround the village of Al Asala during the night of 18th November, informing Aden when he had done so. It was hoped that the Marqashis might be captured when driven from Al Asala by the threat of bombing which was to be conveyed to them after the Sultan's men were in position.

On 16th November photographs of Al Asala were taken, and on the 18th, an Aden Protectorate Levy pack W/T set was despatched to Abyan to transmit confirmation of the surrounding of the village. On the same day an aircraft dropped a letter for the Fadhli Sultan, telling him to send verbal warnings of bombing to the Marqashis in case they were unable to read the messages that were to be dropped on them the following morning.

Early on the morning of the 19th a message was received from the Sultan saying that all was ready. An Intelligence Officer dropped copies of the warning message giving three hours notice of bombing and remained in the vicinity to report developments by W/T. He reported that as soon as the messages were dropped about ninety men left the village, waving cloths and other symbols of surrender, and proceeded towards the Fadhli outposts, leaving no sign of life in Al Asala and its surrounds. On receipt of this information the scale of attack previously ordered was greatly reduced, but it was decided not to abandon our expressed intention of bombing the ruined village.

The bombing started at the appointed hour and whilst it was actually in progress a message reached Headquarters from the Fadhli Sultan that his men were in the village. Actually, there was no one in or near the village since the Sultan's men had been frightened out by the message-dropping aircraft which naturally mistook them for Marqashis. It finally transpired that the Fadhlis, instead of quickly surrounding the village had made a very half-hearted attack during the night, and the Marqashis had escaped to the hills before daylight. The Sultan had been unable to control his own men or to find out until too late what had actually happened and sent erroneous messages. The operation, however, had had the desired effect and the trade route was again rendered secure for travellers.

IRAQ.

His Excellency, the British Ambassador, Iraq, Sir A. J. K. Clark-Kerr, K.C., M.G., was conveyed from Aboukir to Baghdad on return from leave on 18th October in an aircraft of No. 70 (Bomber Transport) Squadron.

Landing Grounds in the Persian Gulf.—An inspection of landing grounds along the Basrah-Aden landplane air route was carried out during October by four aircraft of No. 84 (Bomber) Squadron. The landing grounds visited included Sauqira, Murbat, and Salalah, which had not previously been landed on by aircraft of the Iraq Command.

MIDDLE EAST.

During the course of an engagement on 20th November between a force of Police in the Nablus district, Palestine, and an armed band of Arabs, communication between the Police detachment and Police Headquarters failed and an aircraft of No. 6 (Bomber) Squadron was supplied to co-operate with the detachment. It was found on arrival that the engagement had been concluded successfully and the aircraft returned to Ramleh.

FOREIGN

CZECHOSLOVAKIA

DIESEL ENGINE AIRCRAFT.—The Zbrojovka works at Brno have completed a series of tests on a Diesel type aero-engine called the Z.O.D.-260.

FRANCE

CHIEF OF THE AIR STAFF.—General Denain, who has occupied the dual role of Air Minister and Chief of the Air Staff since February, 1934, has relinquished the duties of the latter post and has appointed General Pujo to be his C.A.S. The latter's appointment automatically carries with it the Vice-Presidency of the Supreme Air Council.

General Pujo, who is fifty-seven years of age, was an air observer at the beginning of the War. After serving as Air Adviser to Marshal Foch on the Somme in 1916 he occupied many important Staff posts, and in 1919 was Chief of Staff at the 12th *Direction* to General Dumesnil. He has subsequently held many distinguished post-War appointments, the more recent being his command of the 3rd Air Region, Tours, and, until his promotion to C.A.S., that of Inspector General of Military Aviation.

PRIZE OFFERED FOR HIGH SPEED FLIGHT.—Much encouragement of high speed flying and to regain records has recently been given to French pilots by the *Société du San Raphael Quinquina*, a large industrial concern, which has placed the sum of 50,000 frs. (£650) at the disposal of French aviation as a prize for the first French airman flying a landplane to reach a speed of 372.8 m.p.h. or flying a seaplane at a speed in excess of 434 m.p.h.—the record set up by the Italian airman Agello.

ROUND-THE-WORLD FLIGHT.—The members of the Organizing Committee of the *Aero Club de France* met on 8th October to draw up the rules for the International air race to be organized at Paris in 1937 on the occasion of the Exhibition. The route is not finally fixed, but the race will start and finish at Paris, and will be via Egypt, the airway to the Far East, Japan, California, U.S.A., and Ireland.

The total prize money will be 7 million francs (approx. £94,000), divided up as follows:—

1st prize	3,000,000	fcs.	(approx. £40,000).
2nd ,, ...	1,500,000	,,	(,, £20,000).
3rd ,, ...	1,000,000	,,	(,, £13,500).
4th, 5th, and 6th prizes each	500,000	,,	(,, £6,800).

Constructors will be allowed complete freedom, from the technical point of view, in the construction of aircraft to take part in the race.

AEROPLANE WITH ROTATING WINGS.—The inventor, M. Richard, has submitted to the French Air Ministry, the design of an aeroplane with rotating wings, conical or plane, which has been examined with a view to constructing an experimental model. The special characteristics of the invention lie in the possibility of varying the parameters which characterizes the working of the rotating, beating wings. It is said that in this respect, M. Richard's designs are better than any other concrete solutions put forward by other inventors.

BLERIOT WORKS.—The Bleriot Aircraft Factory, which was one of the first to be founded in France and turned out thousands of aircraft during the War, has had once more to suspend the payment of wages. The works are now closed and it is not known when they will be re-opened. This state of affairs, at a time

when re-armament has provided aircraft constructors with a full programme of work, is attributed to the delay of the Air Ministry in paying for work done. The Bleriot firm has been working on Government contracts since April, but has so far received no payments. On behalf of the Air Ministry it is explained that they cannot disburse money without permission of the Ministry of Finance. The obvious question which arises is what is the matter with French finance, or at any rate with the Ministry which controls it ?

ITALY

NEW PERSONNEL REGULATIONS.—A new draft law authorizes the Air Ministry to lower the standard of educational requirements in filling vacancies for " Short Service " officers and N.C.O. pilots in the Italian Air Force, as a temporary measure until the end of 1936. A further law suspends promotion examinations for officers, also until the end of 1936. These laws are apparently framed to increase the intake of personnel in order to fill the recently increased establishment of the Italian Air Force and to accelerate promotion within the Service.

ANTI-GAS MEASURES.—With a view to imparting instruction to civilians in the action to be taken in the presence of enemy gas, a small instructional section with a " motor-train " started touring Italy towards the end of October last. Like most Fascist propaganda schemes, it was well organized. It consisted of a lorry and three trailers. The lorry was equipped with a loud-speaker by means of which an appeal is made by a military officer to attract the passers-by.

The trailers were made to look like shops with large plate-glass windows on either side. The first contained historical sketches intended only to arouse interest, the second, photographs and diagrams to illustrate the danger of gas to an untrained and unequipped population, and its comparative harmlessness when proper counter-measures were prepared and taken. There were glass containers with fluid or gas inside to show the colour and substance of various gases, including phosgene, chloro-acetifenone, difenilchloroacina, yprite and Lewisite. In the third trailer anti-gas masks and clothing were portrayed. The masks were of two types, the ordinary type similar to the English box respirator, and the miner's type in which the wearer's own breath is purified in cylinders carried on his back and re-delivered for consumption. The Italians have succeeded in producing a gas mask which can be worn by a woman, without making her look unattractive. It has a beret attached and the face-piece is entirely of mica. The organization of anti-gas measures for the protection of the civilian population is the responsibility of the Italian Red Cross.

OIL RESERVES.—A recent decree issued in Rome enacts that all distributors of mineral oils (fuels and lubricants) must keep a permanent reserve of 70 per cent. of oil. This order is applicable to all storage tanks exceeding a capacity of 500 cubic metres.

JAPAN

ARMY AIR SERVICE EXPANSION.—According to press reports the Army Air Service authorities are searching for a site for a new aerodrome near Osaka, for the establishment of a third new Air regiment. It is understood that difficulty is being experienced in finding a suitable site there, and that if one cannot be found, the new Air regiment may be established near Akashi or Himeji.

MAIZURU NAVAL AIR STATIONS.—It is reported that the hangars and buildings of the Maizuru Naval Air Corps have now been completed, and on the 9th November

a completion ceremony was held. Flying boats and reconnaissance aircraft from Tateyama Naval Air Station took part and gave an air display.

JAPAN-FORMOSA AIR ROUTE.—The Japan-Formosa air route was officially opened on the 8th October, 1935. The first aircraft—a Fokker, owned by the Japan Air Transport Company, left Tachiarai aerodrome, in Kyushu, at 7 a.m., reached Naha, in the Lu Chu Islands at 11.50 a.m., where the aircraft was refuelled, and landed at Matsuyama aerodrome, near Taihoku, at 4 p.m. the same day. The return flight was to take two days, an over-night stop being made at Naha.

Mail only was carried on this route until January, 1936, when passenger traffic was due to commence. The service will, at present, be weekly.

SPAIN.

ADMINISTRATION OF THE AIR SERVICES.—A recent decree issued in Madrid rescinds a previous decree of July, 1934, whereby a Directorate-General of Aviation was instituted under the Presidency of the Council of Ministers. By the new decree, control of the three branches of the Air Service—Military, Naval, and Civil, is transferred to the Ministry of War. Pending the approval of the Cortes of a law establishing the lines on which the National Air Service shall be organized, the different services will function as follows :—

(i) *Naval Air Force.*—Until such time as it may seem advisable to establish one sole command for the different Air Forces, the Naval Co-operation Force will remain under the tactical orders of the naval authorities, but technically and administratively it will be under the Directorate-General of Aviation.

(ii) *Military Air Force.*—The Military "Co-operation" for tactical purposes will belong to the Army Corps, represented by the Inspectors-General of the Army. For technical and administrative matters it will take its orders from the Directorate-General of Aviation.

(iii) *Civil Air Services.*—The Civil Air Services will be under the direct orders of the Directorate-General of Aviation.

(iv) *Credits.*—All credit allotted in the Annual Budget to the National Air Services will be transferred from the Presidency of the Council of Ministers to the War Ministry.

During the past twelve months the gradual transfer has been taking place of all matters relative to the Air Services to the Presidency of the Council, but this was not completed when the new decree appeared.

CONSTITUTION OF THE SUPREME AIR COUNCIL.—In consequence of the transfer of the Directorate-General of Air Services from the Presidency of the Council of Ministers to the Ministry of War, it has been found necessary to alter the constitution of the Supreme Air Council of Spain. With effect from the 25th October, 1935 onwards, this Council consisted of the Minister of War (President), Chiefs of the Central Staff of the Army and Navy, respectively, the Under-Secretary of State for Communications, the Director-General of Air Services, the Chief of the Air Force and the Chief of the Naval Air Force (Members).

VILDEBEEST AIRCRAFT.—Twenty-six Vildebeest torpedo-bombers, which have for some time been under construction in Spain, have now gone into service to the Spanish Air Force. These aircraft, which have been built under licence from Vickers in a Spanish aircraft factory near Madrid, are made for easy conversion into seaplanes.

UNITED STATES.

CRASH OF THE FOUR-ENGINED BOEING BOMBER.—The four-engined Boeing bomber, which was entered for the type contest for the Air Corps replacement bomber, unfortunately crashed on 30th October shortly after taking off on a test flight, burst into flames, and was completely destroyed. All five occupants were injured and two have since died.

It is reported that the investigating board of Air Corps officers who inquired into the cause of the accident found that it was due to the rudder and elevator controls of the aircraft being locked when it left the ground. But it was not determined whether they were in that position because of oversight, or if they had remained locked through failure of the release mechanism to function properly.

The bomber took off from the Dayton testing field at an abnormally steep climbing angle, the report said, and continued in that attitude until it stalled at about 300 feet and crashed to the ground and caught fire. Due to the size of the aircraft and the inherent design of the control system, the board found that a pilot taking off under such conditions, would hardly discover that the controls were locked until too late to prevent a crash. A witness testified that the elevators had been locked while the engines were warmed up and tested.

The Board also reported that after the aircraft had left the ground, at a speed of 74 miles an hour, " it would be practically impossible for the pilot in the air to release the elevator-locking mechanism with an air-flow on the elevators equal to that incurred at the take-off speed with a 12½° up-elevator setting, the one in which the elevators are normally locked while warming up the engines."

With the controls locked, the Board found that there would be about four inches of fore and aft travel of the control wheel, and a lesser degree of travel of the rudder pedals. This movement would be more than that required to take off under normal conditions, so that the pilot, under the circumstances, would not discover the abnormal position of the control surfaces until the aircraft had left the ground.

NEW AIRCRAFT FOR ARMY AIR CORPS.—In spite of the mishap reported above, it is understood that the Army Air Corps have placed an order for several Boeing bombers, though reports of the actual number ordered vary. The Douglas Aircraft Company are said to have obtained the balance of the order, the total order being for 103 bombers.

Details of the twin-engined Douglas aircraft are still being withheld.

" CANNON " AIRCRAFT.—The French Press announces that interest is now being shown in the U.S.A. in cannon aircraft, and that an 860 h.p. supercharged 12 Y.C.R.S. Hispano-Suiza cannon-engine is to be fitted and tried out in an American fighter aircraft. The Press adds that an agreement has been reached between the Hispano-Suiza and Curtiss-Wright firms.

AIR MAIL—U.S.A. TO PHILIPPINES.—On 22nd November, Pan American Airways initiated the first air mail flight from San Francisco to Manila. The aircraft used on the flight was one of the three four-engined Martin flying boats ordered for Pan American Airways. On board the aircraft was a crew of nine and over a ton of mail.

The aircraft left the coast of America on the evening of 22nd November and arrived at Manila, Philippine Islands, ahead of schedule in the afternoon of 29th November. The itinerary was San Francisco—Pearl Harbour, Hawaii—Midway Island—Wake Island—Guam—Manila.

On 2nd December, the flying boat commenced the return trip to U.S.A. and reached San Francisco on 6th December. Besides its crew it carried a load of mails and some freight.

The flying times were: Outward, 59 hours, 47 minutes; homeward, 63 hours, 28 minutes. This makes a total of 123 hours, 15 minutes for about 13,840 nautical miles, so that the average speed was 112.3 knots or 129.2 miles an hour. Due to the crossing of the international date line, a day was lost on the outward journey but was gained on the return journey.

PROPOSED TRANS-ATLANTIC AIR MAIL SERVICE.—The seven members of the British Air Mission arrived in Washington from Ottawa on Wednesday, 4th December, to discuss the proposed trans-Atlantic air mail service. Five representatives from Canada and two from the Irish Free State also arrived on the same day.

The first joint meeting of the Committee on Civil International Aviation and the Air Mission took place on the following morning. The Secretary of State, Mr. Cordell Hull, welcomed the members on arrival in a speech in which he said that the "United States Government particularly welcomed co-operation in a sane and useful proposal such as this."

Sir Donald Banks stated the case for Great Britain and, after considerable discussion, it was finally agreed that Imperial Airways and Pan American Airways should submit "a tentative application on broad general lines, including all matters which might be involved," of their scheme for two round trips per week by each company for the following services:—

(*a*) Local service between Bermuda and American territory.
(*b*) Trans-Atlantic service—Great Britain, Irish Free State, Newfoundland, Bermuda, Canada.

It was stated at the conference that the United States Postmaster-General is not in a position to give a contract to a British company for the carriage of American mails without having recourse to an Act of Congress. To overcome this difficulty, it is hoped to come to an arrangement whereby the British Government should grant a contract to Imperial Airways to carry one half the mails across the Atlantic, and the American Government should grant a similar contract to an American company to carry the other half of the mails on a reciprocal basis.

REVIEWS OF BOOKS

GENERAL

Elizabethan England. E. M. Tenison's new History. Vols. I–IV, 1553–1583.[1]

REVIEWED BY J. F. RUTHVEN, who has generously presented these valuable volumes to the R.U.S.I. Library.

The fallacy that because material methods of warfare change, bygone naval and military events are not of practical interest to-day is put forward only by those who do not realize that the same qualities are needed for a great leader of men now as in the time of Julius Cæsar. The Wolseley Room in the R.U.S. Museum is a monument to one who attributed his own successes to assiduous study of the lives of men of action who had changed the destinies of nations in the past. Amongst Lord Wolseley's pupils was Lieutenant-General Sir Edward Hutton, who exercised so strong an influence as Chairman of the Military History Committee of The King's Royal Rifle Corps. Now, from a pupil of General Hutton, comes *Elizabethan England*, by E. M. Tenison, co-ordinating the doings of the Navy, the Army, statesmen, and men of letters. To rescue the Elizabethan era from modern misapprehension has entailed such an examination into the European situation in general, and the doings of Spain in particular, as no one historian in our own or any other language has hitherto attempted.

In honour of His Majesty's Silver Jubilee, the Director of the Academy of History of Spain presented *Elizabethan England* to the R.N. College, Dartmouth (where H.R.H. Don Juan, now Prince of Asturias, was a Cadet), and also to the R.M. College, Sandhurst. The Academy of History of Spain has for Director the Duke of Berwick and Alba, who is descended from two of the most successful Generals in History—the 3rd Duke of Alba and the 1st Duke of Berwick; it is particularly appropriate therefore that Dartmouth and Sandhurst should have received from him a gift of the only English history which is fair to the Spanish navy and army.

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[1] *Elizabethan England: Being the History of this Country "In Relation to all Foreign Princes."* From original Manuscripts, many hitherto unpublished; co-ordinated with XVI century printed matter ranging from Royal Proclamations to Broadside Ballads. A Survey of Life and Literature. By E. M. Tenison, Member of the Society for Nautical Research. In X volumes quarto: with many hundred portraits and other illustrations in collotype, also title pages and portraits in line: and with portfolio of unique Maps, Charts, Documents, etcetera, relevant to the text, and now first published. Issued for the Author to Subscribers only At the Sign of the Dove with the Griffin. Royal Leamington Spa in the County of Warwick MDCCCCXXXIII. (IV).

Alfonso XII, who in 1874 went straight from Sandhurst to the throne, was always glad to recall his brief but useful English military education. It was he who revived interest in the Royal Armoury in Madrid. It is often forgotten that this *Real Armeria* was founded by Philip II, and our standard historians repeat each other in asserting that Philip was averse to war; but in the new history Mr. Tenison shows us Philip beginning his reign with a successful war in France, when he was King Consort of England. The Spanish frescoes of the St. Quentin operations of 1557, beautifully reproduced, are exact as to details, having been painted to instruct future ages, and throughout this history and in the portfolio the superb illustrations are not mere decorative adjuncts but are part of the vast structure.

Elizabethan England is the first history in which the writer has been trained with equal assiduity by both seamen and soldiers. This historian is therefore able to co-ordinate naval, military, and diplomatic dealings. We are shown "the causes which governed the events." The Elizabethan men of action are delivered from nineteenth and twentieth-century limitations; and the result is a revelation of a far greater co-ordinated efficiency than any previous historian has discovered. I will not epitomize what should unfold in its proper sequence; but the discovery that Lord Burghley was no pacifist but a War Minister of the best quality, that he was not the foe of Drake but in league with Drake, is as important as the restoration of the Spanish victories of 1580, 1582 and 1583 to their right place in European History. In a recent English History of Spain (1934), called by our own press "encyclopædic," there is not a single mention of the Marquis of Santa Cruz, the greatest seaman of his time, and not a word about the Duke of Alba's conquest of Portugal. Portugal is merely described as "annexed in 1581." The story of the conquest in 1580 by the combined naval and military forces of Spain is now at last told by Tenison. We are shown how the balance of power in Europe was altered by the battle of Alcantara. This and the naval victories ensuing at the Azores are absent from all our English academic date tables of European history. Tenison has devoted a whole volume to the three years from the signing of Philip's Commission to Alba in 12th June, 1580, ordering him to conquer Portugal, to the battle of Terceira (Azores) in July, 1583, and the taking possession of Newfoundland by Sir Humphrey Gilbert "in the name of the Crown of England" on 5th August, 1583.

When, in 1890, Captain Mahan published his *The Influence of Sea Power on History*, he began his story in 1660, and in the Introduction, the only XVIth-century fight he mentioned was Lepanto, in 1571. He made no reference to Hakluyt's *Principal Navigations*, published in 1589, dedicated to Chief Secretary Walsingham; nor did he realize that every Sovereign and Potentate, not least the Popes in the XVIth century, recognized sea power as the determining factor. Tenison shows us Philip of Spain and the Grand Turk each aspiring to world dictatorship.

Even as Mahan's one volume, at first frowned upon in America, was translated into nearly every language and exercised a marked influence, so these ten volumes will be a historical landmark of permanent and far-reaching effect. It is said that Mahan had difficulty in finding a publisher. Tenison did not look for one, but acts as publisher and controls every detail of the production, the first four volumes of which (1553 to 1583) are a revelation to us all. The combination of "arts and arms," dignity and discipline, precision and spaciousness, and the revival of the great age delivered from confusion and revealed in all its special features, are achievements of the highest importance. The labours of Tenison—the fruits of a lifetime's independent research and study, were described by a former President of

the R.N. College at Greenwich, the late Admiral J. W. L. McClintock, C.B., D.S.O., as certain to have stimulating results upon the minds of both Services.

This history contains everything necessary to the understanding of it: the footnotes are in five languages; the system of all references being direct from the source has entailed infinite toil, but the results can be easily assimilated. It is the biggest and most vital work in literature and history attempted by a single pen in our day; and in presenting it to the Institution, I am confident that its utility will endure in perpetuity to all loyal subjects of this Empire.

Robert Blake—Sometime Commanding all the Fleets and Naval Forces of England. By Roger Beadon. (Arnold). 15s.

This work will fill a big gap in naval biography, for it is the most readable life of Robert Blake that has been written. Colonel Beadon's book will have special interest for Service readers in that it is the record of a great commander who proved his worth both by land and by sea, and also jointly in amphibian operations.

The chapters on Blake's military career in the West are very ably done, and the author has made clear the significance and meaning of the Western operations to the general course of the Civil War—no easy task. The account of the naval side of Blake's life carries the reader along from episode to episode, while at the same time the operations are clearly described. Yet the chief value of the book lies in the fact that the author, almost alone of all Blake's biographers, has attempted to present Blake as a living person, and to understand and interpret him. He tries to show us Blake's mind at work on the various problems—military, administrative, naval, and diplomatic, that faced him at various points in his career. He succeeds in presenting a very great Englishman—modest and with a devotion to duty never surpassed; a martinet who was loved by his men because he never forgot any who served him well; a commander who could carry out to a triumphant conclusion an operation that unforeseen factors had, for the moment, apparently checked; and a hero who held on to his task until, worn out, death claimed him before waiting England could salute in person the Admiral who had made her mistress of the seas.

Though Colonel Beadon does not give chapter and verse for all his statements, the student will recognize that he knows both his period and the authorities. The book is well illustrated, the frontispiece being the miniature by Samuel Cooper, now in the National Maritime Museum. The index is excellent. The general reader who wants to know more about this comparatively unknown Admiral could find no better or more reliable volume. It will be the standard work for some time to come.

With Pershing in Mexico. By Colonel H. A. Toulmin. (Military Service Publishing Coy.).

This book gives an interesting account of the expedition under General Pershing against the irregular forces of Villa in 1916. Transportation, owing to lack of water, great distances, general absence of roads and railways, and the desert nature of the terrain, played a leading part. The fine fighting qualities and skill at arms of the U.S.A. troopers are well brought out, and the high degree of specialized and technical skill demanded of mechanized troopers in their Army is described in the last chapter.

This campaign affords a good example of " small war " conditions, and for this reason is of special interest to British readers.

L'Evacuation des Pays Baltiques par les Allemands. By Général A. Niessel. (Charles-Lavauzelle et Cie.). 12 Frs.

In October, 1919, M. Clemenceau, Minister for War, appointed General Niessel as President of the Inter-Allied Commission for the Baltic States. The General describes in detail the opposition and intrigues of the German civil and military authorities to the evacuation of these States. That they were evacuated at all was, in his opinion, chiefly due to the military pressure exerted by the Lettish and Lithuanian forces. In view of the suggestion in certain quarters for a Franco-German *rapprochement*, the General's conclusions are of considerable interest.

Southern Rhodesia as a Field of Settlement for Retired Indian Army Officers. By Major W. J. Cawthorn, I.A. (Department of Publicity, Southern Rhodesia).

This pamphlet is issued in connection with the " War Block " scheme for retirement of Indian Army officers—men between thirty-eight and forty-three years of age with pensions of £400 for bachelors and £550 for married men with three children.

Major Cawthorn, who was sent to Rhodesia to report on conditions there by Army Headquarters, India, has taken a great deal of trouble and has gone very thoroughly into the subject. He advises any officer of limited means to visit Southern Rhodesia and see the conditions for himself before deciding to settle elsewhere.

NAVAL

Naval Memoirs of Admiral of the Fleet Sir Roger Keyes, 1916-1918. (Thornton Butterworth.) 18s.

In this second volume of Sir Roger Keyes' Memoirs we have his version of the battle of Jutland, compiled partly from his impressions gathered on joining the Grand Fleet a bare month after the action, and partly, no doubt, from the official investigations which took place while he was Deputy Chief of the Naval Staff after the War at the time when controversy was at its height. It cannot be said that he adds anything of great importance to historical records, and while he seems to have laboured to be scrupulously fair, he leaves an impression of special pleading for the battle cruisers and their commander, and of criticism of lack of greater initiative in the conduct of the main action. It is this tendency to compare the incomparable which has been such an unfortunate feature in most accounts of the battle, while it has done more than anything else to belittle the achievement of British arms in the greatest naval engagement of the War. It is absurd to compare the responsibilities and actions of the leader of a Light Brigade with those of a Commander-in-Chief: the former may ride at the head of a heroic charge and be justified both in his risks and his losses; but the latter might " lose the war in an afternoon " if he adopted a similar policy and staked the whole force at his disposal on a single throw. There is no more striking instance of the change which increased responsibility and altered circumstances can bring about than the views expressed at an Admiralty Conference on 2nd January, 1918, by the late Admiral Commanding the Battle Cruisers, who by then had become C.-in-C. of the Grand Fleet.[1]

[1] " . . . The Commander-in-Chief informed the Conference that it was, in his opinion, no longer desirable to provoke a fleet action, even if the opportunity should occur. Such large contingents of our naval forces were now absorbed in the regular duties of the anti-submarine campaign, that he could no longer be certain of meeting the German fleet even on terms of equality."—*Official History of the War*, Naval Operations, Vol. V, p. 206.

Many will not agree with the author when he commends that unfortunate and acrimonious production, the so-called official *Narrative of the Battle of Jutland*, as being a "clear . . . statement of fact without comment or deduction, free from prejudice or bias." Luckily, the War College and Tactical School are now able to study every detail of the battle, and naval officers are now free to make their own deductions without any "official" interpretations being imposed on them.

Interest in this volume grows apace, however, from the moment that the writer is appointed to the Admiralty as Director of Plans, and begins to get to grips with the submarine menace and the situation in the Dover Straits. The moral courage with which he proceeds to tackle heavily entrenched interests which he has found to be inimical to the conduct of the war, must claim our admiration no less than the physical courage which is so patent again and again, however modestly concealed in the narrative. Anyone who knows the Admiralty machine will realize that, even in war, it is no easy task to convince those in high places that the whole policy and practice of a high commander, which have had Their Lordships' blessing for some three years, have been wrong or at any rate ineffective. But Admiral Keyes was fortunate in obtaining irrefutable evidence in support of his case from the Director of Naval Intelligence, Rear-Admiral R. H. Hall, which won him the powerful backing of the First Lord, Sir Eric Geddes, and the Deputy First Sea Lord—his old chief, Admiral Sir Rosslyn Wemyss. It was decided that drastic changes must be made, and it was poetic justice that Keyes should have been sent to put things right.

It would be hard to imagine a less propitious introduction for an Admiral taking over a new appointment than to have to divulge to his command that a great part of their long and arduous labours had been practically futile, and that the proof that this was the case had been lying locked up in his predecessor's safe for months. It requires more than ordinary personality to secure the whole-hearted transfer of loyalty to new leadership and to a new system, in such circumstances; but that it was given him in full measure subsequent events proved. Those who witnessed this change of regime will scarcely need these Memoirs to recall the spirit of activity which the new commander brought with him, and the sense of trust combined with expectation with which he inspired those who were to have the good fortune to serve him. Nor were they disappointed: the dreary months of plan after plan, which never got further than paper or practice and did little or nothing to harm the enemy, soon gave way to a more warlike policy which, amongst many achievements, produced the great illuminated mine barrage and patrol system which eventually made the Dover Straits impassable to enemy submarines.

The days when lack of any undue offensive on our part had been reciprocated by the enemy resting content with the *status quo*—including the practically free passage of his submarines through the Straits—were over; and the first reaction to a more aggressive regime was a raid by German destroyers which resulted in the sinking of a trawler, seven drifters, and a paddle minesweeper, and heavy casualties amongst their war-time crews. It speaks volumes for the leadership which re-established confidence after such a debacle.

Admiral Keyes' account of the effort to block Zeebrugge and Ostend are enthralling. He makes no extravagant claims, but he places the whole operation in its true perspective, giving the praise which is their due to the blockships as being the central feature of the undertaking, while by no means belittling the gallantry and enterprise of the attack on the Mole and all the other auxiliary activities which were the fruits of a remarkably high standard of organization. This narrative will

do much to correct false impressions and accounts of the origin, planning, execution and results of one of the most epic incidents in the history of the War.

These human and graphic memoirs are further brightened by excellent photographs, one of the most interesting of which was taken by H.M. the Queen of the Belgians; this is a group at La Panne, which includes their late Majesties King George V and King Albert, Lord Athlone, Lord Stamfordham, the present King of the Belgians—then Prince Leopold—and the author.

Jane's Fighting Ships, 1935. 39th Edition. Edited by F. E. McMurtrie, A.I.N.A. (Sampson Low, Marston & Co.). £2 2s.

Many factors at the present moment make the possession of a full and up-to-date reference book on naval affairs an absolute necessity. Had the publication of the 39th edition of *Jane's Fighting Ships* been delayed it would have added to the difficulties of even the instructed student to grasp thoroughly the implications of such problems as qualitative and quantitative restrictions, which have arisen once again in connection with the Naval Conference; or to appreciate clearly the material aspects of the present naval situation in the Mediterranean.

This 1935 edition, published for the first time under the sole editorship of Mr. F. E. McMurtrie, contains a vast amount of new information and a great number of new photographs. The failure of the Disarmament Conference and the consequent enlargement and hastening of building programmes by many important Powers necessitated a drastic revision of the previous edition. The publishers state that this entailed "the resetting of almost every page in the book." In a work of such magnitude this must have involved an enormous amount of careful research and labour. Their claim that the 1935 edition is "at the moment the most complete and up-to-date record of the World's War Fleets in existence" is well founded, and must be a source of satisfaction to the Editor and his collaborators.

The Jubilee Review in July last provided an opportunity for securing new photographs of a number of ships; full and effective advantage was taken of it. Not only are there many photographs of new construction, but several of older ships whose appearance has been altered by reconstruction and by the addition —and in some cases the removal—of catapults and aircraft. Notable in the latter category are the "Hood" and the "Resolution."

The re-creation of Germany's navy as a formidable fighting force is emphasized by several photographs of the latest additions to her fleet. The United States, French, Italian, and Japanese sections have been brought up to date with a wealth of new statistics and photographs.

Two innovations appear in this issue. One is a list of ships added and deleted since the last edition, and it is to be hoped that this will become a permanent feature. Lists of additions can be compiled without great difficulty, if laboriously; but a list of ships permanently placed out of commission is not easy to come by. The second new feature is an explanatory diagram of a battleship which should be of great assistance to the reader who has but scant knowledge of the technical terms applied to the various parts of a warship. A tabulated comparative statement of the number of ships in the principal categories, building and projected, of all the sea Powers would be a further asset.

Some of the identification silhouettes have been altered by the insertion of sketches with a broken water-line. Opinions are invited by the publishers from readers at sea as to whether this is an improvement.

Sea Saga. Edited by L. King-Hall. (Victor Gollancz, Ltd.). 18s.

In editing the diaries of four naval members of her family Miss King-Hall has accomplished skilfully and creditably a feat of selection and condensation. The narratives form an almost unbroken relation of naval experiences from 1805 until the end of the Great War.

Surgeon James Hall, son of a Yorkshire weaver, began his diary when he entered the Russian service in the squadron of Admiral Seniavin. In 1807 he joined the British Navy. While serving in the " Jason " in 1814, employed carrying distinguished personages to and from the Continent, he wrote interesting impressions of the Duke of Clarence, Marshal Blücher, and the Princess Charlotte. In the " Hecla " he was present at the bombardment of Algier. Later he made several voyages in convict ships to Australia, and also visited Madagascar, China, and India.

William King-Hall, named after his father's friend the captain of the " Jason," was destined to serve in the Masters' line, but transferred to the executive branch. Like his father, he was an acute observer and wrote good accounts of his experiences on active service against the Carlists, in the Syrian War, in the Baltic expeditions, and in China. His long and meritorious career terminated in 1879 after he had held appointments as Admiral Superintendent, Devonport, and Commander-in-Chief at the Nore.

Sir George King-Hall served from 1864 to 1913, a period during which he witnessed fundamental changes afloat. On the East African coast he assisted in the suppression of the slave trade. As Captain of H.M.S. " Narcissus " he occupied Wei-hai-Wei in 1898. He was sent out to Australia in 1910 as Commander-in-Chief, charged with the mission of establishing the Royal Australian Navy. Following his father's example, he has been greatly interested in promoting philanthropic and other worthy causes.

The diary and letters of Commander Stephen King-Hall, covering the years 1906 to 1919, form an illuminating record of events in the North Sea during the Great War. Altogether these readable chronicles furnish an excellent panorama of naval life.

Sea Dogs of the Sixties. By Jim Dan Hill. (Oxford University Press). 13s. 6d.

In this volume are presented eight character sketches of distinguished naval officers of the American Civil War. On the Northern side the author selects: David G. Faragut, hero of the attacks on New Orleans and Mobile; Charles Wilkes, who took the Confederate Commissioners Mason and Slidell out of the R.M.S. " Trent "; John Rodgers II, a pioneer among the ironclad commanders, who in the " Weehawken " captured the " Atlanta "; and John A. Winslow of the " Kearsage," who sank the " Alabama."

The Southerners are: James D. Bulloch, who, as naval agent abroad, equipped raiders and promoted blockade running; John Wilkinson, most successful of all the blockade-running captains; Charles W. Read, whose raiding exploit on the Atlantic seaboard demoralized commercial circles in New York; and James I. Waddell of the " Shenandoah " (ex " Sea King "), who destroyed the Yankee Bering Sea whaling fleet, circumnavigated the world, and was the last man to fly the Confederate flag.

In his preface the author says that, with the exception of Farragut, the men of his choice " are not the most famous seamen who emerged from the conflict . . .

each reflected or typified a specific phase of the Civil War." The narratives concerning their personalities are interesting and exemplify widely different degrees of iniative in commanders acting for the most part individually.

As the title indicates, the sketches are impressionist rather than conservatively historical. They are written in readable style, though the author is prone to the use of many modern American expressions suggestive rather of films than of the sea in the Sixties.

MILITARY

Plumer of Messines. By General Sir Charles Harington. (John Murray). 12s. 6d.

Without attempting embellishment—he modestly disclaims literary talent—General Harington has pieced together contributions from friends of Field-Marshal Lord Plumer, " ranging from Field-Marshals to transport drivers and private soldiers," to form a character portrait of his old Chief, and at the same time give some idea of his manifold activities as soldier, administrator, sportsman, churchman, Army commander, pillar of Toc H, and President of the M.C.C. There is no flattery, only the plain statements of those who knew and worked with him. These are supplemented by extracts from his letters to his wife and to friends. The author's main object is that this story of a great life which he puts before them may be of use to others, " especially to the younger generation."

Plumer's career is well known: infantry officer, Staff College graduate, Matabeleland, S. Africa, Quarter-Master-General, a Division in Ireland, the Northern Command, V. Corps, Second Army, Rhineland, Governor of Malta, High Commissioner in Palestine. He had no powerful backing, did not pretend to have " a brilliant brain " or be " a genius in any way," and his promotion through the junior ranks was not rapid. But he was thorough, with an infinite capacity for taking pains. " Be fair " was his favourite motto; he had an instinctive gift of putting himself in the other fellow's place; he " was never known to utter an unkind word against anyone, nor would he allow anyone else to do so." General Harington lays stress not only on " his intense sense of loyalty," but on his great sense of humour: " he always had a cheery word for everyone; he was at his best when things were really bad." Yet no one could be more determined or more " deliciously definite."

All who were privileged to serve under him were the better for it. The Archbishop of Canterbury, an old friend, who contributes a Foreword, says of a visit to the Second Army in France:

> " I felt at once the atmosphere of trust and devotion to himself which he had created around himself. They seemed, indeed, one proud, happy family, of which he was in his quiet, decisive way the centre."

Many must have felt the sentiment expressed by an Australian who, when asked whither his unit was marching, replied:

> " We don't know where, but, thank God, we are going back to Daddy Plumer's Army."

Soldiers will read with interest of Plumer's administrative work in Malta, in difficult circumstances, as related by Sir William Robertson, his deputy Governor, and, under even more difficult conditions, in Palestine, as told by Sir Stewart Symes.

General Harington keeps clear of controversies, except he states that so far as he knows—and he was present at every conference and had charge of Plumer's

correspondence—his Chief never raised any objection to the Passchendaele operations. He does not reveal the secret of how he and his Chief worked together to make one of the most famous combinations in military history; rightly so, for the relations of a General with his chief of staff should be as sacred as those of husband and wife.

A Study of the Strategy and Tactics of the Russo-Japanese War, 1904, up to 24th August. By Lieut.-Colonel A. Kearsey, D.S.O., O.B.E., p.s.c. (Gale and Polden). 5s.

This book has been specially written for the Military History set for Promotion Examinations, March, 1937. The author stresses the importance of morale and discipline in war, a point which is sometimes overlooked in the very necessary pursuit of improvements in armaments and material.

Avec les " Bleus " du 1er Grenadier de France. By H. J. Hardouin.

On 2nd August, 1914, the author was mobilized as machine-gun corporal in the 1st Battalion 46th Infantry Regiment at Fontainebleau. This battalion is known as the 1st Grenadiers, the Regiment of La Tour d'Auvergne, who was killed in action in 1800 in Bavaria. That officer's heart, enclosed in a silver casket, was in previous wars carried into action by a non-commissioned officer of his old Company, but this custom had been discontinued prior to 1914.

From 1914 to 1916 the battalion fought in the Argonne and Meuse sectors and formed part of the famous Army of Verdun. The author kept a dairy during the whole of his service, and describes the operations in which he took part in considerable detail. The psychology of the French soldier is well portrayed and obviously differs greatly from our own. The loss in action of a hand brought the author's military service to an untimely end.

The Battle of the Marne—8th-10th September, 1914. Issued by command of the Army Council. (H.M. Stationery Office). 2s. net.

This pamphlet is intended to form a framework for the detailed study by officers of the battle of the Marne. The story of the battle is written in clear and soldierly language, and is accompanied by three good maps, and the principal lessons of the battle are very fully brought out. But this action cannot be fully comprehended without an understanding of the position in rear of the two opposing Armies as it was affected by the railway movement situation. The student should supplement this account by reading an article entitled " Strategic Movement by Rail, 1914," by Major Napier, in the JOURNAL for May, 1935.

Foundations of Soldiering. By Major M. K. Wardle, D.S.O., M.C. (Gale and Polden.) 3s. 6d.

This book deals with the platoon, the company, and the junior regimental officer: the fundamentals of soldiering. It is concerned not so much with tactical training as with the routine in barracks which produces discipline and *esprit de corps*. In spite of this, the book is by no means dull.

The writer is an enthusiast on his subject and shows how barrack-room routine can help in developing that great characteristic of our soldiers, the unconquerable fighting spirit. It is well worthy of study by all officers of whatever rank.

REGIMENTAL HISTORIES

Footprints of the 1/4th Leicestershire Regiment. By John Milne. (Edgar Backus). 5s.

The unit disembarked on 3rd March, 1915, at Le Havre, and on 26th March went into the line near Armentières. Unlike many other battalions, it fought through the whole War on the Western Front and finished up on 11th November, 1918, East of Le Cateau. On 13th October, 1915, the Regiment attacked the Hohenzollern redoubt and, after desperate fighting, in which all ranks behaved most gallantly, was forced back with the loss of twenty officers and 453 other ranks. The sequel comes three years later. On 29th September, 1918, the battalion, forming part of the 46th Division, crossed the Saint Quentin Canal and stormed the Hindenburg Line, taking a leading part in the capture of 4000 Germans.

Outline of Regimental History of the 19th (Lothian and Border Horse) Armoured Car Company. By Major J. R. Marshall. (Thomas Allan & Sons).

This pamphlet traces the descent of the Company from three Yeomanry Regiments raised in 1797. The unit served with distinction in the South African War, and included in its ranks the present Lord Chancellor (Lord Hailsham). The battle honours, "France and Flanders 1915," "Doiran 1918," and "Macedonia 1915–1918," were awarded for services in the Great War.

AIR

Jane's All the World's Aircraft, 1935. Compiled and Edited by C. G. Grey and Leonard Bridgman. (Sampson Low). £2 2s.

The Service reader of a new *Jane's Aircraft* naturally turns to the military section, and this year especially will note with interest that Germany is now represented there. Despite the fact that the editor in his preface pleads lack of information until too late for publication, it is disappointing to find that so little is given under this heading. A work with the reputation that *Jane's* has established in its twenty-five years of publication must naturally contain only unimpeachable information, but there are surely many sources from which the compilers could have found more material regarding the disposition of Germany's military air strength. In the aircraft section we find only one photograph of an aeroplane labelled as a military machine, and there are only three or four mentions altogether of the types that Germany is building in their hundreds for the new Air Force. This secrecy regarding types and performances can only add to the suspicions that are aroused by every German aeronautical movement.

The Italian sections, too, contain little more military information than was known last year, although descriptions of the performances of some of their bombers have been published elsewhere. Both the German and Italian Air Forces were dealt with in recent issues of the JOURNAL, and it seems that little new has come to light since then.

These criticisms cannot fail to strike a military observer, but, for all that, this publication is again worthy of its position as the world's standard aeronautical work of reference. It is set out as clearly as usual with hundreds of fine photographic illustrations, and covers the ground that its title of "All the World's Aircraft" implies.

As Mr. Grey points out in his preface, it is interesting to notice the high speed claimed for most modern aeroplanes; 200 m.p.h. is a very ordinary figure, and we have already heard of aircraft undergoing trials and in production whose speeds are nearer 300 m.p.h. The Royal Air Force, as part of its new equipment under the expansion scheme, will receive two important new types. The Avro Anson, designed for coastal reconnaissance, is a twin-engined cabin monoplane with a top speed of 188 m.p.h.; 175 of these aircraft have been ordered by the Air Ministry for the work hitherto carried out by flying boats. The other type is the Bristol 143 twin-engined monoplane bomber, of which 200 have been ordered, and it is reported to have a top speed of 268 m.p.h. with a range of over a thousand miles. The Gloster Gladiator, another new aircraft for service with the Royal Air Force, is said to be considerably faster than its earlier type, the Gauntlet, which has a speed of 230 m.p.h. An interesting feature of the Gladiator is that its actual performance is much higher than that originally estimated by its designers, and, although it carries some hundreds of pounds more fuel and equipment than the Gauntlet, it has a much better performance with the same engine.

After studying *Jane's Aircraft* it seems as though the single-seater fighter is losing that essential superiority in performance over the bomber which made it so popular with pilot and staff. But without this superiority its usefulness declines. In fact, it would seem to be the long-range high-performance bombing aircraft which strikes the keynote of 1935 aeronautical development.

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